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CONTENTS

Letters

Barford looks for software designed for the handicapped, some useful programs ring up, and the latest contributions to the chart debate

News

Tramont's plans for Atari, a special report from Commodore's new Carly factory, and a new feature — a summary of the latest software releases

The disk computer

A beginner's guide to using the 1541 disk drive, based on the book by David Lawrence and Mark England. New owners must have!

Modems and networks

Robin Williams takes a detailed look at the most popular networks, Modems and Computers — what can they do for you?

Profile

Chris Jenkins takes what may be a final trip to Commodore's South HQ, and gets the hard facts about Visoft from Janet Richardson

Japanese jerry



Big bopper David Fox works out with the latest addition of shooting stars — which jerry is the best alien/Murphy, and which gets them down in Europe?

User Cases

Mobile Bus programmer Richard Clark provides this month's Vis 20 equivalent, Master X. Will you survive the space age?

Games software



Pete Girard takes on the legends of 1541 and breaks the diggers (44-46)

Extra money for the 64

It's only 18, but it could make for all the difference. David Nelson shows you how

Software list

Here are Vis and 64 listings, plus missing links from Apple's "Miscellaneous"

Imports

The first of a new series of book reviews on the Commodore scene

Sanshine books competition

The first of this month's two seasons — was a complete set of Sanshine books

Answer Back

Technical expert Jack Cohen takes on the latest batch of readers' problems

Discount Club

Another new feature — Supermarket software on British discounts

Competitive

Tweety backs winners and reveals CBM 64 games from Quest's software

EDITORIAL

JACK TRAMONT IS NOT apologising for being a 'raving mad'. He is a pragmatic chairman who built up Commodore from nothing in a multimillion-pound company. Commodore was very much his personal bet.

That it was a considerable surprise when Tramont announced his resignation as Commodore's president and chief executive in January this year. At the time he claimed that he was resigning for "personal reasons" and that there was no animosity between him and the remaining members of the Commodore board. However, subsequent reports suggest that there was an acrimonious split between Tramont and Commodore chairman Irving Gould over Tramont's desire to bring his sons into the business.

But, following his purchase of Atari for \$240m, Tramont is back. And the continuing of his sight now is undoubtedly Commodore.

Whether Tramont can repeat his extraordinary success with Atari remains to be seen, but he has certainly given Commodore something to think about. Atari last year (1985), but two years ago it was the hottest property on the microcomputer scene and worth more than \$1.5bn. With manufacturing plants in the US, Hong Kong, Korea and Taiwan, Atari is one of the few companies which could match Commodore's volume of production.

Tramont has already given notice that he intends to move that by leaving off several hundred of Atari's California workshops. Some industry observers now expect Atari to drop the price of its 2600, moving it in direct competition with the Commodore 64.

Commodore has now started by taking out an injunction against four of its employees who have joined Tramont at Atari. The injunction prevents the four employees from "using or disclosing or any manner whatsoever any trade secrets or proprietary or confidential information belonging to Commodore".

The stage is now set for a head-on clash between the two companies — and to the victor will go the spoils.

Lamasoft

ORIGINAL SOFTWARE DESIGN

99 MOULT PLEASANT, TACILET, HAMTS 19000 8000



FIGURE 5.4.8 (a) $\cos(\theta)$; (b) $\sin(\theta)$; (c) $\tan(\theta)$; (d) $\sec(\theta)$; (e) $\csc(\theta)$; (f) $\cot(\theta)$



1000



1000



1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

LETTERS PAGE

Bardsoft appeal

WE ARE in the process of maintaining a database of software for the handicapped — BARDSOFT. Briefly, each entry to the database will contain a description of the program, the hardware they are suitable for, the type of computer system required, name and address of supplier — developer and price, etc. This information will be made available through printers to answer to specific queries.

The aim of BARDSOFT will be to facilitate the exchange of information on software relevant to any aspect of the lives of handicapped people. One major addition will be the constant effort to promote the database, and therefore the software, abroad. This is what we have been doing successfully for non-software products in the field.

As we are currently collecting and processing information, we would be pleased to hear from any of your readership who may

wish to contribute to BARDSOFT. For further information please contact me at the above address. *Peter Curran Bardsoft Handicapped Persons Research Unit Newcastle upon Tyne Polytechnic No 1 Coast Lane Coast Lane Campus Newcastle upon Tyne*

Saving strings

MANY THANKS to John Connolly for his idea for changing program lines under program control (July issue). It was just what I needed for a personal application. Up till now I have used a routine to save data which prints data lines on the screen just before the end of the program, then when the program ends one brings the cursor up to the lines so printed and presses return to add them to the end of the program. However, the following routine may be of interest and will enable a string to be saved as a data statement.

The dummy data line, which must always be the last on the program, must be exactly the same length as the data statement to be saved. Unfortunately this limits the

routine to strings of fixed length. (This length must include the comma in the eventual data statement) 1 DATA @ @ @ @ @ @ @ @ @ @ (Dummy data line) 20 IN = PEEK(H) + 254 PEEK(H) + 3 (Start of line + 3) 30 REM START OF MAIN PROGRAM (don't move prog) 40 FILL = 0 (0) 45 PRINT 50 NEXT 60 REM END OF MAIN PROGRAM (don't move prog) 70 IN = "1994" CS = "" (String to be saved—can be anything) 80 FOR A = 1 TO LEN(IN) : B = IN(MID\$(IN,A,1)) : C = B + CS + DEL NEXT CS = LEFT\$(C,LEN(C)-1) : (Convert Char to a Del and chop off final comma) 90 FOR A = 1 TO DEL : A = ASC(MID\$(C,A,1) NEXT (Convert data back to ASC values) 100 FOR A = 1 TO PEEK(MEM) : M = M + B NEXT (Spoke ASC values into basic memory) 110 REM READ DATA 120 READ AS (LEFT\$(M,1)) : "M" REM PRINT "DATA NOT SAVED" END (Duplicate of data has been saved) 130 RESTORE CS = "" (Reset data pointer) 140 FOR A = 1 TO B : READ AS = CS + AS NEXT (Get saved

data into a string) 150 PRINT "DS IS " : CS END

This routine will run on any computer VIC20 — Last 10 other case of the. Regarding last line programs such as "Tosca" — I have not tried Tosca but have read a total of three of Jack's books. I can stop which does the same thing, without any serious what-ers. The device will save and verify 100% but in no circumstances will it load the program back into the Vic without corrupting it. Has anyone any suggestions as to what is wrong? *Jim Gammell Preston Chapel*

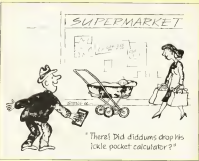
Pubquest plea

I MUST write in support of Ben Ackermann and Don Lubke — starts for the best selling software and ratings for non software would be sure to make Commodore Magazine even more popular.

My main query concerns a certain advertisement called Pubquest by Steven Software. It is a truly excellent and only game living up to its claims as both witty and unusual. However, it has one slight drawback — it's impossible I can't find any way of closing the read from the Classified Flag box. I didn't get run over or poisoned by nuclear radiation in Prison Crossing business.

My suspicion is that the answer lies in a copy sent to the above mentioned Pub's "W.C.", however I cannot find anyway of getting the "winded" thing. All my friends agree with me, so could you please publish my query in order to let if any other readers know a solution. *Sammy Powell Brentford London*

This is the chance to air your views — send your tips, complaints and compliments to Letters Page, Commodore Magazine, 13, 15 1994a Newport Street, London WC2E 8LB



"There! Did diddums drop his ickle pocket calculator?"

NEWS DESK

K-Tel change

RECORD- and software distributors K-Tel are to set up a new software subsidiary.

The Frost-Kamers label will be launched in September with two games, one of which, *Samurai Warrior*, is a graphic adventure for the 64. Frost are not yet available.

There are three 64 games available from K-Tel, either on tape or disk. Titles include *Cry*, *Arise*, and *Colony*.

Frost-Kamers spokespersons Karen Wilde said "We're starting up the new label to ensure that the software division is being run independently to the rest of K-Tel, and will be making separate distribution deals. There will be several Frost-Kamers games for the 64, but it's too early to give details."

That MICROCOMPUTER in clarity has been rocked by the news that former Commodore head Jack Tramiel has bought an old model Atari.

Atari, a subsidiary of the giant Warner corporation, has been losing money for some time due to the success of microcomputer games over dedicated games playing machines.

Now Tramiel, who left Commodore after an argument with chairman Irving Gould, allegedly over the firing of Tramiel's niece into the business, has paid \$200k for most of Atari. Further than pay cash, a complicated deal involving shares and stock op-

tions has been made by Tramiel's new company.

Atari's chairman James Morgan was first heard after the news of the takeover by



Tramiel set up business on his own

Tramiel Technology Incorporated. All Atari's plans, for a new home computer, an enhanced machine, and work with George "Star Wars"

Lucas, are now in doubt. Many of the workforce and almost all of the source materials are expected to leave.

Now, although Jack Tramiel will make no comment on his plans for Atari, it seems plain that he intends to fight Commodore, the company he set up, as hard as possible. Already the firings have started, as Commodore has accused defectors employees of taking secret material on the planned Commodore 2-8000 machine in Tramiel.

Tramiel seems determined to live up to his motto — "I'm not a business to be loved — I'm in business to make money."

Leeds CBM Show off

THE SECOND HALF of the 5th International Commodore Computer Show, planned to be held in Leeds from 27th — 29th of September, has been cancelled.

Granada micros

HIGH STREET TV retail giant Granada has announced plans to sell home computers.

Following listings through public stores, Granada has decided to market the Commodore 64 and Vic 20, as well as the Sinclair Spectrum and the Electron and BBC B computers.

A wide range of computer games, educational software and peripherals will also be sold to over 800 Granada stores. Spokesman John Harper said that apart from the basic machines Granada was also looking at peripherals such as printers and disk drives, and planning to market a range of the most popular software.

The 1984 exhibition was arranged in two parts following the success of the previous show. However, following poor attendance at the London show in June, plans have been changed.

Commodore claims that the reason for the cancellation is the complication caused by the strike in Corby. A statement from Commodore's PR office said that "after three stages the Leeds show without a full complement of staff and resources, we have decided to postpone it for the time being... another factor is that we will shortly be embarking on production of the new computers — our major priority will be to bring production up to full strength."

Further details of the Leeds show will be given later in the year, but in the meantime it seems far from certain whether the show will take place at all. The recent Earl's Court and Micro Trade shows also drew poor crowds, indicating perhaps that the micro manufacturers will have to find something new for the public in use of the computer to be improved before Christmas.

Suitable case from Jenart

JENART DESIGN has solved the problem of transporting your Vic or 64 — whether to the computer club, the music store, or back to the shop to get it fixed.

The Jenart Carrying and Storage case is made of waterproof acrylic and shatterproof ABS plastic, padded with foam and constructed with high-strength glass and metal corners. The computer slips vertically into one pocket, held in place by the padded lid. The disc drive and power supply can be stored in another pocket, and there's space enough left for tapes and cables.

The case, which includes lifetime straps and a carrying handle, costs £19.25 + £2.25 plus 10 cents with a Commodore 64 or Vic 20 tape.

Jenart also manufactures a range of disc covers, including a Commodore model at £3.25 + 30p plus, along with cases and covers for all the popular models.

Contact Jenart at 78, Spire Lane, Belper, Derbyshire, South Merton, Devon, EXM 4NT, or Belper Mynagins 075.

Now all we need is a case for the disk drive.



JENART — just in case



Chris Jenkins visits Commodore UK's new Corby HQ and talks to production manager David Briggs

A NEW FALA for Commodore UK will start in the first week of August, when the new Corby manufacturing facility comes into full production.

Commodore's Slough headquarters have long been too small for the rapidly expanding company, and with the help of government development grants the Elm Corby plant has been set up to allow for further growth.

At the same time Commodore UK will go into production of the Vic and 64, and later the Plus4 and C16. Commodore micros have previously been manufactured in Brannschweig, West Germany.

Interviewed at the Corby



David Briggs — young and

into, production manager David Briggs said that the move was going according to plan. "The machine factory was completed in May, and has been in production since July. The service department is also fully operational."

All departments, including sales and marketing, will be housed in the just-built factory once that building is completed. Only external work now remains to be done.

Corby, situated near Kettering, has been an unemployment 'blackspot' since the closure of the British Steel works some years ago. Now Commodore, and other electronic companies such as RSC Components, is bringing life back to the area. 140 people have been employed on the assembly line already, and the full complement should reach 200.

Despite some initial apprehensions about the move, David Briggs claims that some Slough employees see the advantages of Corby. "Working hours are cheaper and you're only five minutes drive from the countryside."

For Commodore micro users, the advantages of having manufacturing and service facilities on one site are obvious. "We've knocked

together a 20,000 and a 30,000 square foot warehouse to set up the assembly line. The cases, keyboards and PCB's come in overnight, and we turn in the orders for four hours, assemble the units and test the keyboards, then test the whole unit again before passing it to packing and dispatch. We also have serving quality inspectors on the assembly line."

Production of the 64 is already at 5,000 per day.

However, there is as yet no production of the Vic, Plus4 or C16, and David Briggs declined to comment on whether the new machines would be ready in large quantities for Christmas.

Type duplication stays with outside contractors, although data will be produced at Corby. There are no plans for the production of consoles, or for peripherals which will continue to be made overseas.



Corby warehouse packed with kit for dispatch

The 64 Software Centre

1, Princeton Street, London WC1. Tel 01-430 0954

The specialist centre with the widest range of software for the Commodore 64 and the best service. Open 10am/5pm (incl. Saturdays) Demonstration facilities.

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● GAMES & ADVENTURES:

English and American (Cassette, Disk, Cartridges).

● COMPUTER COURSES:

Dr Watson's Basic and Assembler for Beginners, CBM 64 Tutor.

Friendly assistance and advice given. Expert orders welcome. Immediate despatch for mail and telephone orders (Access, Visa, Eurocard, Mastercard). Discounts for package deals.

Video giants hit 64

TWO GIANT video game corporations are set to enter the 64 software market.

Parker's video arcade Star Wars, based on the George Lucas film, *Oxygen*, a complex space arcade game, *Mc Don's Castle*, a "buddies" game and

versions of the arcade favourites *Popeye* and *Q*bert*. All the games will be available on disk only in September. European product manager Ron Porter comments: "Already we are seeing a marked increase in the disk drive penetration of mid-range home computer users." The first move — the games will cost around £24.95.

Activision's plans began with *Profitt 2*, a follow-up to the popular role-playing *Profitt*. Again the hero is

Profitt Harry, this time teaching a magic for incantations and his missing magic. Tape version costs £9.95, but the disk price has yet to be announced.

Already available are *Brain Rider*, *Profitt* and *Decathlon*. These are adapted and enhanced versions of video game originals.

Fortcoming titles include *Zong*, *HERO*, *Tiny Towers* and *River Raid*. All the Activision games should be available by late Summer.

Dataview value

DATAVIEW software spread via Dataview have released a highlighting word processor and compiler for the 64.

Spokesman Ted Newman explained: "Wordrich 64 is a version of a program developed for the 4000 series. On the 8000's it costs £125 — the 64 version, which retains most of the features, is only £49.95 on disk. Although it's a forty-column program, it has full screen scrolling, colour control and all the features you'd expect of a top-quality word processor."

"The 3rd Pack DVL Compiler comes in two versions — a tape costing £14.95, which allows up to 12K of object code to be compiled, and a £29.95 disk which has no restrictions since the program can spend in and out of the disk. The disk version also has special routines for speed movements."

For further details contact Dataview at Forrester House, Box Bay, Colchester, phone 0206 362110.

Commodore staff on the move

WITH THE MOVE to the new Corby plant, Commodore will make a number of changes in management structure.

John Barker, marketing manager, is leaving to work with Amstrad. Software Amstrad has a growing reputation as important of European game software (see *Commodore Horizons*, May).

Although Commodore is "actively looking" for a replacement, no appointment has been announced at the time of writing.

Gal Wallington, software

product manager, will not be moving to Corby. UK managing director Howard Stans-



Stansbury on the move from CBM

bury, European software co-ordinator for Commodore Electronics, at a time not yet decided. His job will be to check the suitability of software, not just for the UK market but for overseas distribution.

The Corby move will mean redundancy for a number of junior clerical staff at Stansbury, but Howard Stansbury's words: "We'll be talking with to almost all those who regard their work with Commodore as a career rather than just a job."

work commented that "Lad Wallington will be working as

SOFT*HITS*SOFT*HITS*SOFT*HITS

THIS MONTH round-up of software releases will be extended next month into a whole new section of *Commodore Horizons*. From now on we'll be looking at more software and helping you to make more choices, so that readers will get the widest possible coverage of the rapidly expanding range of software for the 64 and Vix 30.



Horizon, 64, cassette, £6.95. *Isadora*. New company, new idea — fifty fractals of scenic adventure set in mythical Greece. *Concerto*, 64, 44/45, cassette, £8.95. *Concerto*, Great value — 30 basic patterns on one tape. *Mixers*, *Space Invaders*, even simple adventures quality comparable to good magazine listings. You can look into the programs to study programming techniques.

Scrapped, 64, cassette, £9.95. *English Software*. Graphic adventure with 30 screens. An *Special Agent* Sal you have to find your missing spaceship and escape from a strange planet.

Magpie, 64, cassette, £7.95. *Magpie*. Magpie games get better and better — this one is a fast-moving underground arcade subterfuge with rollers and runway weapons standing between you and the top of gold.

Blue Thunder, 64, cassette, £8.95. *Richard Wilson*. Fast adaptation of the Spectrum original. Plot your progress against a score of enemies to rescue your comrades from the clutches of an invisible enemy. *Recommender*, 64, cassette, £9.95, also £12.95. *Previews*. A guide — 112 *Starline* vehicles with solid figures instead of mere



fractal. First move — "Through the window" access as you pilot your battle tank across a planetary surface littered with mysterious obstacles. Blast-matching 2000 style spaceway sequence makes this one a must.

Recommender, 64, cassette, £2.95. *Analogue*. New "buddies" game to which you control a workman collecting boxes threatened by intelligent monsters.

Shogun, Vix + 30, cassette, £3.95. *Masterworks*. Might be a puzzle from the days of the cheap games, but it hasn't been able to get past the fact it never got! As the prize, how can you say no? *Guardian*, 44, cassette, £6.95. *Allegre*. Excellent implementation of the arcade classic *Defender*. *Hammerhead*, *Isadora*.



monsters, pods, swarms, hawks and bombers fill the air. Great sound effects, superb graphics and obstacles. Guess your joystick and get it.

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Next month's New Releases section will feature more games, more news, check, and details of new utility and business packages too.

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POWER MICROPOWER

Living with your 1541

Theory and practice of the 1541 disk drive from David Lawrence and Mark England's Disk Companion

DISK STORAGE. Like tape storage, depends on the fact that a thin layer of a ferrous metal compound is capable of being magnetized and demagnetized. When magnetized by proximity to a magnetic field, such compounds have the capacity to maintain their magnetized state.

When spread thinly, tiny amounts of such compounds are capable of recording the fact that an electromagnet has passed next to them, the degree of magnetization is proportional to the duration of the current.

Moving back magnetized, the film can be read by an electromagnet which has its current being fed through it, since it is a property of electromagnets that they produce an electric current when passed through a magnetic field — even the magnetic field created by a thin film of ferrous compound.

Provided, then, that an electromagnet can be made to pass over the film sufficiently slowly, and the state of the electromagnet can be changed in a controlled manner, and provided that this can be done with sufficient accuracy that the state produced can be returned to zero and then again, then the entire surface of the thin layer of a ferrous compound can be used to store information.

In the context of a computer disk drive, the film of ferrous compound is held on the surface of a 3½-inch piece of disc, flexible plastic. The electromagnet is provided by the disk drive in the form of a thin magnetic recording head capable of being moved with great accuracy in a straight line between the center of the disk and its circumference. The movement of the head over the film is provided by the overwriting of the disk. In essence then, a disk, upon completion of a recording shift and an electromagnet which can read it and set it back to its zero state.

In formation

The advantage of this system compared to tape is that simply the speed with which a single block of information can be stored — some tape systems are very fast indeed. The real power of the disk system lies in the speed at which it can find the information or the place where it is to be stored. A good analogy is the difference between an ordinary audio cassette recorder and a tape playing record. Provided that in both cases you know where the information you want is stored, in which track of an album you wish to play, the disk will provide you with

much faster access since you are able to move the needle directly in towards the centre of the rotatable unit as positioned correctly. Thus then, another kind of movement, in the revolution of the disk itself, allows you to find what you want. With the tape system, you have only one kind of movement available to you and you will have to chase fast to find what you want until the correct place is found.

Formatting

Unlike a long playing record, the disks used by the 1541 disk drive do not come with individual tracks laid out in a permanent form. The film recording medium is, or should be, of a uniform consistency over the whole of the disk's surface. Dividing up the disk into ready-storable "tracks" for the storage and retrieval of data is a task undertaken by the disk drive itself in a process called "formatting".

The purpose of the formatting process is to mark the disk permanently with a series of areas called "sectors". Imagine these sectors of an inch long. Sectors fall into groups which, as with long playing records,

are known as tracks, thirty-five of them in all, with the number of sectors varying according to the distance of the track from the centre of the disk — the further from the centre, the larger the track and the more sectors it will contain.

This simple process is accomplished by some means within your system which will enable the fifty-lined disk drive mechanism to identify its place on the disk and move the recording head. Each sector is created with an area of 256 bytes for the storage of data but also has written into it other information, such as the identification number of the disk, the number of the track on which the sector falls, and the number of the sector within the track, plus some standard data which the disk drive will later use to check that it is properly synchronized with the disk as it turns.

Apart from the block address prepared for the storage of data, an area of the disk track (16 is reserved for the use of the "directory" or list of files which the disk will eventually contain. When the disk is first formatted, only the first two sectors of track 10 will be used for this purpose — other sectors will be brought in as programs are added. Included in the directory is an area of bookkeeping information known as the Block Allocation Map. The purpose of the BAM is to record, for every sector on the disk, whether that sector is available for the storage of information or if it is occupied by part of an existing file.

Sector zero

The BAM is positioned in the first sector (sector zero) of track 10 and consists of 140 bytes of disk space. This space is itself divided up into 10 sets of four bytes each. The first byte of the group indicates the number of sectors available on one of the disk's 10 tracks. The next three bytes record the start of sectors 0-1, 2-10, 11-20,

TRACK — 10

0	SEQ F	PRG BLOCK 2
1	EOF F	PRG BLOCK 2
2	LIST TAG F	PRG BLOCK 14
3	AFRQCT F-WOW	SEQ BLOCK 1
4	LIST TAG F	PRG BLOCK 12
5	SEQ ARRAYS F	PRG BLOCK 4
6	TEST1	SEQ BLOCK 1
7	SCREEN SAVE	PRG BLOCK 1
8	PROG READ	PRG BLOCK 1
9	SCREEN	PRG BLOCK 1
10	SEQ F	PRG BLOCK 3
11	EOF F	PRG BLOCK 3
12	SEQ ARRAYS F	PRG BLOCK 3
13	SEQ ARRAYS F	PRG BLOCK 3
14	LIST TAG F	PRG BLOCK 13
15	SCREEN	PRG BLOCK 3
16	LIST TAG F	PRG BLOCK 11
17	SCREEN	PRG BLOCK 4
18	PROG READ	PRG BLOCK 2
19	SCREEN	PRG BLOCK 2
20	SEQ F	PRG BLOCK 4

Figure 4. Allocation of sectors on a special track

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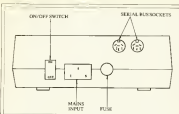


Figure 2. Block diagram of the 1541 disk drive.

417-23) of the corresponding track. If sector zero of the corresponding track is available for storage, for instance, the one of the values stored in the second of the four bytes will be lost (the signal is zero rather than none). If the value of a whole byte (or eight bits) is zero, so that none of its bits is set, this would indicate that the right sector is in recording use all in use by a current file. You may note that the RAM station provides for recording 24 sectors (0-23), even though there is a maximum of 31 on the long power tracks and two on the tracks over the center. The RAM overcomes this potential difficulty by registering these non-existent tracks as non-existent when the disk is formatted.

Directory

If there are more than eight files on the disk, then another sector of track 18 will need to be added to the directory. The last sector of the directory is indicated by the fact that the first two bytes, which normally indicate the address of the following sector, point to track zero, sector 255, which does not exist.

Having set up the disk structure and the usual directory, the disk is now ready for the storage of information in units which are known as "files." The two types of file which are used most often are the program file, which is what is created when a program is **SAVED**, and the sequential file, which is created when a file is **OPENED** for the storage of more of data. Both these types are stored on the disk in exactly the same way, so we shall take for an example the **SAVING** of an ordinary program file.

This is the sequence of events involved in **SAVING** a program file:

- 1) The **SAVE** command is entered by the user and the 64 instructs the disk drive to open a program file of this name.
- 2) The disk drive checks its directory to see that a file of that name does not already exist.
- 3) Provided that there is no file of the same name, the disk drive records the filename in the directory with a starting track and sector of 0,120 -- is a new **SECTOR** track.
- 4) Using the **RAM**, which is always kept

in the disk drive memory, the drive begins to search for the nearest track to the directory track, either out towards the edge of the disk or in towards the center, which has a first sector (**SECTOR0**) and marks that sector as allocated to the RAM.

5) Having found **SECTOR0**, the drive records its position and then occupies 224 bytes of the program from the 64 and places them into a buffer in the disk memory.

6) Another search is now made for the nearest free sector other than the one discovered in step 4 (**SECTOR0**).

7) The address of **SECTOR2** discovered by step 6) is now written in a the first two bytes of the disk buffer created in step 5.

8) The whole of the contents of the buffer are now written into **SECTOR1** (discovered in step 6).

9) **SECTOR2** is now regarded as **SECTOR0** and the process is repeated from step 5 until the 64 informs the disk drive to close the file, by which time the whole of the program has been processed.

10) For the final bufferful of data, the address of the next sector (the first two

bytes) is set at track zero, sector 255, to mark the end of the file.

11) The directory entry for the new file is altered to record the sector used for the beginning of the file and the number of bytes contained in the file.

By the time programs have been written to the disk, removed and overwritten during the course of time, the structure of the disk will appear most confused to the human eye, with a mishmash of sectors in each track allocated to a variety of programs. Provided that nothing happens to corrupt the directory, however, or the two bytes at the beginning of each sector which record the position of the next sector of the file, the disk drive will always be able to find the start of a file that it holds and read that file sector by sector without difficulty. An indication of the kind of disk structure that will be found on a well-used disk is given by table 1. The table displays the contents of a single track of one of the disks used in the development of the book.

Powerful

So far, we have looked at disks and their layout but taken the activities of the 1541 drive itself for granted. It would be wrong to conclude the article, however, without a reminder that the 1541 is an extremely sophisticated and powerful piece of equipment, driven by a 4096 micro-processor and its own internal Disk Operating System program which is as large as the ROM of the 64 itself. The advantage of this is that, unlike disk drives for the majority of other personal microcomputers, the use of the 1541 drive requires no memory to be set aside by the host computer to run it. Rather than relying on the 64 for detailed instructions as to the handling of its affairs, the 1541 normally requires only to be informed of the name of the task to be carried out. It will then proceed without further help on one of the complex procedures it is capable of performing. For this reason, the 1541 is known as an "intelligent drive".

To operate a disk system you need not

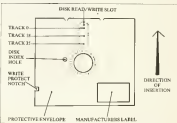


Figure 3. Diagram of a typical 5 1/4 inch floppy disk.

commodore 64 disk companion

essential routines for commodore
disk users

david lawrence and mark england



Almost one 1941 disk drive, together with a connecting lead, is all that you need to use a system. You will also require a set of 5 1/4 inch floppy disks — three externally come in boxes of ten but can be bought singly. It should not be forgotten that you will also require an extra power socket from which to run the disk drive.

Precautions

Assuming that your 64, its power unit and the television monitor which you normally use are all properly maintained, and that the power is C.O.V. in all the countries, follow these procedures:

1) Turn the 64 around so that the back of the machine faces you.

2) Looking from right to left, you will find two rectangular slots on back of which may be seen the edge of the 64's peaked corner board.

3) To the left of these two slots are two circular plug sockets. The one on the right is a single socket and is called the serial bus. It is the means by which the 64 communicates with outside devices such as printers and disk drives.

4) If you have a printer connected to the serial bus socket, disconnect it for the time being.

5) Plug into the serial bus socket one of the small round plugs (DB9) which go in the connecting lead which came with the disk drive.

6) You can now turn the 64 round so that the keyboard is again facing you.

7) Take the disk drive and place it next to the 64 so that its back is facing you.

8) On the back of the 1941 you will find the connections shown in Figure 2.

9) Take the other end of the connecting cable you have just plugged into the back of the 64 and plug it into either of the sockets marked SERIAL BUS or in the illustration.

10) If you have a second disk drive, plug its connecting cable into the other socket. (If you wish to operate machines that use drive you will also have to alter the device number of one of the drives if the drive has not been permanently modified.) A

whole series of drives can be devised in this way if desired.

11) If you have a Commodore compatible printer, you may now connect it to the spare serial bus socket on the last disk drive to be connected to the system.

12) Notice that the 1941, the Commodore 64, the TV — monitor (and printer if connected) are all switched off. Plug the mains connection lead into the back of the 1941 and then connect the other end of the lead to the mains. Switch on the mains power to the 64, TV — monitor (and printer if connected). Do not at this stage switch on the equipment itself.

13) Turn the 1941 around so that its front is facing you, being careful not to snag any of the leads under the drive.

14) On the front of the 1941 you will see a small bar protruding. The bar will be in one of two positions: a) slightly below the slot which runs across the front of the drive or b) slightly above it.

15) If the bar is in position a), push it in gently with your finger and allow it to move gently upwards on its spring.

16) The disk drive door is now open. To make absolutely sure that the drive does not release a disk or the spindles if switched on, to protect the internal mechanism during servicing, close the door by pressing gently down until it locks and then opening it again.

17) If a disk or the protective card is now visible, remove by sliding gently towards you.

18) Break the disk drive on (and the printer if connected). Both the green and red lights on the front of the drive will come on, the drive will whirr for a second or so, then the whirling will stop and the red light will go out. If the red light does not go out, switch the drive off, check the connections and repeat this step. If the red light still

remains on, consult your dealer.

19) Switch on your 64. (You should see the same sequence as described under step 18).

20) Switch on your TV — monitor and tune it on the output of the 64.

21) You are now ready to use your Commodore 64 disk system.

Sequence

The recommended sequence for switching on a disk system since it has been properly set up is: PRINTER — DISK DRIVE — COMPUTER.

Given in Figure 3 is the layout of a typical 5 1/4 inch floppy disk. Such disks will serve you well if you observe a few simple rules.

1) The disk is never removed from its protective envelope. It can be used quite satisfactorily within the envelope and will be read through the READ — WRITE SLOT.

2) Floppy disks, or hard disks, are not designed to be deliberately formatted or fixed. If, by accident, a disk is accidentally bent slightly, it should survive but there is no guarantee of this. There is always a slight amount of give in the disk when inserting it into the drive or removing it — do not worry about this, simply do not go to extremes.

3) Your disks will have been supplied with a protective sleeve which covers most of the disk envelope and protects the READ — WRITE SLOT. When not in use, disks should always be replaced in the sleeve. Disks should preferably be stored upright in a plastic (or non-magnetic) box specially designed for the purpose. Never leave disks lying on any surface, not of their own accord. It is common to see disks carelessly laid flat about unprotected in the belief that, provided that the READ — WRITE SLOT on the 'front' of



Figure 3: the 1941 disk drive — don't cut straight

the disk like slide with the label is not mounted, all will be well. Since the 1541 actually reads the disk from the back, this is unlikely to be true.

4) Disks should never be exposed to a magnetic field, which includes leaving them on the top of the disk drive or the TV monitor.

5) Disks should never be exposed to dampness or extremes of temperature, which includes leaving them in direct sunlight.

6) It is **absolutely** without saying that you should never touch the READ-WRITE SLLOT of the disk.

7) Cheap disks, like cheap tapes, can lead to disaster. Only you can decide how much your programs and data are worth to you.

To place the disk in the drive, first ensure that the disk drive door is open, then insert the disk so that the manufacturer's label is upwards and the READ-WRITE SLLOT end of the disk is towards the 1541. Push the disk gently into the horizontal slot on the front of the drive. If the disk catches slightly as it is pushed home, do not attempt to force it — remove it and try again. If you continue to have problems, check to ensure that another disk is not caught in the drive.

Provided that no problems are encountered, the disk should be pushed fully home until no part of a protrusion and a tab on the drive without pressure from the fingers. Finally, close the disk drive door — the disk drive cannot be actuated by the 64 until this has been done. Disks are removed from the drive simply

by opening the disk drive door, when the disk will slide out automatically on a rack. If the disk does not appear, close and open the door again. Disks which are reluctant to come out of the drive can just be coaxed with the fingers, though no force should be used.

If disks occasionally stick in the drive, either there is a problem with the disk (such as a label sticking out over the edge) or the drive is faulty. Never poke inside the drive with any kind of tool to try to free a disk — especially if the drive is connected to the main.

Complex

Never open the door of the disk drive while the red light is on and the drive motor is running, or damage to the disk may result. First that some editors of the CMI manual incorrectly state that the disk may not be removed while the green light is on. The green light is the disk power indicator and the only way to extinguish it is to switch off the power to the drive. Do not attempt to do this before removing the disk.

Like any other computer piece of equipment, it is possible for the 1541 to lapse occasionally from its usual high standard of reliability. It is possible, for instance, for errors to be encountered in the reading or writing of a program, or for some other problem to arise which prevents a disk containing being properly carried out. In this case the red drive light will flash on and off and you should repeat the procedure which led to the error if you are sure that the mistake is not your own.

In some circumstances, it is possible for a situation to develop where the 64 and the disk drive simply refuse to communicate with each other. Following the recommended switching-on procedure, the solution would be to remove the disk, to switch off the 64 and the disk drive and then to switch them on again in the correct order.

If the 64 envisages a program where you are trying to save then you experience a disk removing the disk and switching off the 1541 and any other device connected to the serial bus, such as a printer, and then switching it back on again will almost invariably solve the problem. It is as well to remember that, if all else fails, the Datacube monitor may well be capable of redressing the situation by saving the program until the disk system can be sorted out.

It is unlikely that the 1541 will give you many problems if you remember that it is a program engineered machine which, unlike the 64, has moving parts which should not be subject to vibrations, sudden shocks or excessive heat (including direct sunlight).

Though it seems a small point to be given a separate section, do always check that the disk drive door is open and the drive empty before switching off the drive. In actual fact, disks are seldom damaged by being left in the drive when it is turned off, but it can happen. ■

The Comprehensive 64 Disk Companion
by David Lawrence and Mark England
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Depeché modem

With modems getting cheaper all the time, there is a growing interest in all types of network and database. Noble Williamson reports on Micronet 800 and CompuNet

INTEREST in the public telephone network is the next big growth area in the use of small networks in the home or at work. During the next five months two large online database operators, not to mention various bulletin boards and value-added operators, will be starting the CompuNet 800 cover.

Micronet 800, one of the largest databases on the UK Personal computers network is opening up a special CompuNet section in August, while CompuNet has linked up with a giant American corporation to launch CompuNet in September.

The major advantage of hooking up to the telephone system is the ability to access data which is held on other, very large, computer systems, eg Prodata. Transferring files from your computer to a friend's means over a hundred miles away — or just on the other side of town — obviously has great potential, both for fun and experimentation.

Alternatively, you can access the bulletin boards — mini-databases of information by enthusiastic amateurs — which have sprung like wildfire in the United States.

Basic components

You need two basic components to connect your machine to the telephone network, apart from a phone and a telephone. Firstly you need a Modem — this controls the speed of data transmission from your micro to the host machine and vice versa. Secondly you need a terminal software package — this interprets what is coming down the phone line in your micro and converts it into a form your micro can understand.

In much the same way that disk drives and printers need interfaces to link them with micros, so communication devices need an interfacing mechanism. For modems, this consists of a serial interface, usually via an RS232C port. However, the Commodore 64 will have a cartridge containing software to RS232C.

The data in your micro is transmitted between different circuits simultaneously and is parallel. But the micro processes digital signals, whereas the telephone network transmits the human voice in analogue form.

This is where the modem — it stands for modulator and demodulator — steps in,

by converting analogue signals to digital and vice versa.

The signals generated by your computer are digital and represent 1s and 0s by separate voltage levels. A group of these bits (binary digits) is called a byte and the object of serial data is to send a byte or bytes from point to point along a single channel — in this case the telephone wire.

When no data is being transmitted, the voltage is kept between -3 and -15. Reception of a key or pulse means the voltage level is to be changed to between +3 and +15.

The full ASCII set is your micro is represented by 8 bit data. Additional bits are added to tell the host machine that the transmission of a byte is about to begin (the start bit) or has just stopped (the stop bit).

The letter A, for example, which is represented by an eight bit sequence will have at least 10 bits as a byte whose transmission over the telephone network in fact is less than ten bits as that the host machine knows what it has received. This is called the parity bit.

This method of data transmission is called asynchronous and allows the terminal to synchronise with the transmitter at the start of each byte. At the end of 10 or 11 bits of transmission, the receiver waits for the start and waits for the next burst of data.

Another piece of serial terminology used in modem communications is



Duplex, which describes how data transmission takes place between two points.

Full Duplex. Two modems operating in this mode are each capable of receiving and transmitting data simultaneously. This is achieved by sending characters of differing tones in opposing directions.

Half-Duplex. Allows data to be sent in one direction only at one time, because both modems send characters in the same tone.

The final factor factor to consider with modems is the speed at which they transmit data — known as the baud rate. This measures the number of modulations per second where the modulation signals a change in the transmission activity. Prodata and CompuNet, for example, transmit data at 1200 bits per second, while your micro talks back to them at 24 bits per second. Hence a 1200/24 modem.

Most bulletin boards operate at 1200/240, although some are now beginning to offer 1200/24. More to



more transmission of long files is usually best done at 1200/1200 but speed and economy or 800/800, though it can be done with 800/75 as long as the modem has variable baud receive and transmit options on it.

Finally, you need to decide whether to go for an accurate modem (and if you want portability) or a hard-wired modem. Generally, accurate modems can be prone to line noise unless the telephone handset fits into a moulded case, and there are a wide range of telephone handset shapes and sizes. Some accurate modems are extremely difficult having flexible "bat" tips, but tend to be a little noisy.

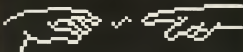
Hard-wired modems are becoming more widespread. They plug into a standard telephone wall socket (the type 600 BT new port in with all new phone systems) and are therefore less prone to line noise, which corrupts data.

Two years ago, a modem for a home computer would have cost anything from £250 up to, with the advent of large public databases, modems can cost anything from £50 upwards. The ideal modem would be hard-wired offering 800/800, 1200/75 and 1200/1200 with auto send and receive plus other frills. They begin at around £150.

Software

Once you have decided on a modem, the next thing is to choose the software best suited to your needs. Usually, modem suppliers will recommend a package they

CONTACT



- GOTO 1 Computing**
2 Personal
3 Adventure
4 Miscellaneous
5 Starnet Captains

know will work well with your particular mine.

There are some golden rules to watch out for when buying this "terminal emulation" software. The first is that communications can be fun, but watch out for that phone bill. You should ensure what facilities the software has to help keep your costs down.

The second rule is one of ease — ease software packages come in 8088 with errors drawn across, but require a good knowledge of communications.

Simple terminal software will allow you to log-on to most bulletin board services, view screens of information and type in messages while on-line. Some bulletin boards will even let you have free software to help in the logging process and download software in ASCII or hex files.

Public databases

Public service databases offer more complex software that can allow you to edit and prepare messages offline for auto-transmission once on-line, thus saving telephone time. Other databases include name logs and system identity ratings and only those new and future log on view pages of information such as daily news or status pages.

Once you are hooked on communications, the next thing to explore is the massive on-line public databases you can log onto.

Commodore owners have an extremely wide choice with two services aimed directly at them — Micronet and Compuserve. These are in addition to generally available services like bulletin boards and private information retrieval databases aimed at researchers or businesses.

Both services use videotex and both offer database machines and terminal software.

Micronet 800 offers what it describes as a "mass of the art communication cartilage" with plenty of links, which can be used with any standard V28 or V22 modem. The software comes in FROM and other terminal software for other systems can be overlaid onto it from disk or cassette. Price is reduced to be around £49.95.

Special wording included in the FROM is also slow, but such — from a software supplier's point of view — software downloading.

Micronet will sell you a system with 1200/75, 1200/1200 for around £79.95, although the whole package should be available in selected retail shops.

Cost of Micronet is as basic form is £23 a year subscription which also lets you take many other Postal services like teleshopping, national and international news, travel and home heating. But, you will never enter costs on Micronet although messaging — at least at the moment — is free and not legally available from September to a local telephone call.

Printed down charge you access time-based costs during peak telephone times of 1p per minute, but savings and weekends are free.

Full details from Micronet 800, Barnard House, Watford Hill, London EC1.

Compuserve is a bit more complex and is not free for legal use last September, so direct computer use difficult at the time of writing.

There is a big added bonus with Compuserve — the first year subscription (which would normally be £199) is included in the price of the modem and special software for Compuserve. At £99 you get a 1200/75 1200/1200 modem, plus software, plus one year's use of Compuserve. However, once hooked up to Compuserve you begin to pay for other charges, though their level only really

depends on when and what facilities you use.

Compuserve offers messaging like Micronet, but at 11p a line. Other facilities include downloading of free and commercial software, local call access, to major UK centres, off-peak rate discounts, peak time (in office hours) to 11p.

What is really attractive about Compuserve is the ability for users to upload their own information or programs onto the network as the data is error corrected both ways. You can change the post code software in an area called the Jungle and Compuserve takes a 40% contribution. The same applies for information you may sell.

Software Park

Software Park is also sold in the Software Park, which is where the modem comes from its box. It has a variety of services, including which permits software once downloaded from Compuserve being run on another machine.

A contribution of 50% is charged to the Park. Users are charged for storing information pages or 1p bytes of programs at 11p a day per unit.

Compuserve users to have a large teleshopping service operated by Compuserve — you can buy goods at discount prices and have a free 8000 account — buying and publishing. Full details from Commodore Information Centre, 815 Apple Avenue, Slough, Berks SL1 4AG, or ask a dealer for details.

There are numerous bulletin board services scattered around the country which have evolved from the dominant days of Tandy. These are normally based on public services and Dial which operates at 300/300 or 1200/75. Run by Display Electronics, it offers teleshopping, messaging and credit card shopping of computers. Write to 24-12 (Blox) Way, Upper Norwood, London SE19. ■

THE GREAT SPACE





RACE

MONI
SOFT 2

Vicsoft ready to head North

Will the Carby move mean better service from Vicsoft? Aye, there's the rub! Janet Richardson talks to Chris Jenkins

VICSOFT has been getting some pretty bad press recently — first said again letters appear in the pages of computer magazines which are along predictable lines: "I can no longer order to Vicsoft and six weeks later they sent me half of it. I kept trying to phone them, but I couldn't get an answer. I'm still waiting for my first gals, it's been three months now." — and so on.

Janet Richardson is now in the Vicsoft hot seat. While acknowledging the service's past problems, she's quick to defend its record. "I consider my blood hot sometimes when I see letters in the computer press attacking Vicsoft's service — firstly we aren't in a position to reply to individual criticisms, and secondly you never see letters being published which praise people. Bearing in mind the size of the service, we only have a tiny proportion of orders which have problems."

Part of the problem has been the unexpected response to the service. Vicsoft catalogues are now sent out with each new Commodore magazine, but when some 200,000 copies were sent out last Christmas the software media went berserk. "We just underestimated the response we'd get — it's a mistake we're now planning to make sure Christmas!"

Janet's full title is Customer Support Manager, and her responsibilities include Vicsoft and the Information Service. "I started with Commodore as personal secretary to Howard Skemmons, the UK general manager. I didn't have any real knowledge about computing, but this was didn't matter at all — previously I'd been working in the food business, so I'd had some experience using VDU's, I'd also had a lot of experience dealing with the public, which was useful, since a large part of a personal secretary's job is involved with keeping the public away from the boss!"

Clear error

Janet's position as the general manager's secretary gave her a unique insight into the operation of all sections of Commodore UK, and an understanding of the company's customer relations policy. "I got on very well with Howard then went — I think you could say his attitude to the public is 'firm, fair and friendly'. He's aware that we must deal sympathetically with users problems, but the company has no intention of being soft — Commodore isn't the kind of company to date anything out. Around 30% of the problems we deal with are due to user error, so it's wrong to assume that the company is usually at

fault."

The technical enquiries section has two experienced computer users available to answer questions, with a complete range of hardware and software available to check queries. "It's difficult to answer some telephone enquiries, since if someone claims that they're typing in a program correctly you can't check it over the phone. The only way to deal with user error is to be very patient! Our technicians are kept busy all day answering enquiries, but once we move to Carby we should be getting started three people."

"Some of the questions we get, about third-party software, which is sold through the Vicsoft catalogue, are more difficult to answer, and in these cases our technicians have to refer people to the relevant software house. If you have a technical query you must phone the information service number, which is given on all our advertisements — there's no point phoning Vicsoft, since it's purely a mail-order service, which doesn't have any technical people."

Errors

Some problems arise because of mistakes in the data manual or the Programmer's reference guide. "There's a six-page correction sheet for the manual, and a short error sheet for the PRG — these are now being included with new machines, but if anyone sends a copy they should just forward the information come. Also please let us know if you've sent you've spotted any other errors."

Intensive training of technical staff should mean that the Information centre service becomes even better. Most enquiries, though, are levelled against the Vicsoft mail order service — in what have the problems been there?

"We send out a catalogue each quarter for the UK, and one for the US. We try to register the orders date to date, but the post delays, which come about a week after the release of the catalogue, fall on different dates, but in the past we've been caught out by underestimating the response we'd get. One of the most common complaints against Vicsoft was that the free gift of food on paying the club was very slow at coming. This is because we ordered a certain quantity of food orders and that food, and there was much less than we anticipated. We went back to the manufacturers to get more supplies, and they just couldn't do it. It was partly



Janet Richardson and Vicsoft's success what though?

Vicsoft's lack for underestimating the tremendous number of sales ordered up by the 44 last Christmas.

"Another problem is that once orders peak about a month after the catalogue is released, we can receive anything between 250 and 3000 orders orders for each catalogue each day. This makes it very difficult to control our staffing levels, though staggering the catalogue does help."

In an attempt to control stock more effectively, Vicsoft has introduced a stock controller. "All operations to far as possible are now computerised. Vicsoft's main frame is a Honeywell, and the Carby one, which is already running, is an IBM. Incoming orders are entered onto Vicsoft's VDU's. Cash checking is done by hand, and orders are sent to the Vicsoft warehouse, where the orders are packed and dispatched. All out-of-stock items are recorded on the stock controller's CBAC700, and now, instead of waiting for items to come in, we put in special orders. Items and tapes we can usually deal with fairly quickly."

Cartridges

"More cartridges are manufactured in the Far East, they create more problems. By surface, delivery takes us to eight weeks, but in comparison we can arrange for our tapes, which is expensive but only takes three days. The last emergency air delivery was of the International Soccer cartridge. It's been amazing everything else for months, and I expect it will



continues — "Early, slow and even design service."

contrast to do-up at least last Christmas. At the moment we've only got three copies in stock — perhaps it's time for another emergency order!"

Occasionally problems arise when programs are advertised, then have to be ditched before full production. Fortunately, Commodore is usually guilty of this, though supply problems for programs in production are not common at all. "When we move to Corky, the space adjacent to VisiSoft will be much larger than the space we have here in Slough. Unfortunately we're the last to leave, since the ceiling of the new factory which is to house VisiSoft is the last to be completed. Commodore has designed the space available in Slough, and VisiSoft is expanding as fast as any part of the company. We can temporarily better service after the move, and don't anticipate much problem in the move itself."

Northanger

Janet Brindley is a Northanger, and in such is only too pleased to be moving closer to home. "I think the move is good for the company, and it's good for me too. Everyone at Slough was offered jobs at Corky and about 30% of the VisiSoft-information center staff are moving. I believe almost all the software services have chosen to go. There will unfortunately be redundancies among those who chose not to go to Corky. The move should be completed by the end of August."

What of the future of the VisiSoft service itself? What will Commodore owners be getting for their £1 manual interrupter for?

"We'll be continuing the special discount offers and the free gifts on joining, although it's largely a marketing decision what to offer. There'll probably continue to be a promotion based around disk drives, though the free Sharpprint offer has now ended. Again, the decision on that is really the province of the marketing department rather than VisiSoft itself."

Mailshot list

Janet was quick to point out that anyone can buy from VisiSoft without having to join the club. "We do have many thousands of members, though — unfortunately, at the moment I can't give an exact figure. The situation is complicated because we also have a mailing list, of around 100,000, which is made up from the magazines made we receive from each machine sold. This list is probably very much out of date, and we're working it so that we can avoid sending out material to people who perhaps bought their Visi several years ago and have now moved on to other machines."

VisiSoft is run semi-independently from Commodore, and is expected to make a profit. "In effect we buy stock from Commodore — although no money actually changes hands — and we buy from outside suppliers. We then operate the mail-order service and hope to make a profit, which is the amount we do. It's not a huge profit, but obviously if a shipped box for £10 is in for want? The information service, though, is purely that — a service for customers."

Future plans will obviously include software for the Plus/4 and C16. "We're not planning to push VisiSoft as a hardware supply service, since this involves servicing problems — any equipment sold would have to be posted back to us in the event of a problem, and people are understandably reluctant to do that."

Product

A catalogue devoted to software for the new machines must obviously wait until sufficient product is ready to make a worthwhile. "I know that there are several programs ready, or nearly ready, in the software department, and we have to wait for third party software to come through too. Obviously we'll like a big Christmas launch, but it's really necessary to say. A lot depends on the response from outside software houses."

On the future of the Visi 20, Janet was optimistic. "The next Visi 20 catalogue has just gone to the printers, and it's the biggest one; I didn't see any sign of the demand for software falling off. Even if the machine is discontinued, there's such a large user base out there that software should continue to sell. At the moment the software is just not selling Visi, but as I've said the software packages it's mostly games for the Visi, many with educational aspects, which for the £4.95 is a good market of games, education, and utilities. There's some sign of a move towards disks, but I think games and a lack of information about disk drives are still putting many users off."

Cartelogue

The other change planned is in the nature of the VisiSoft catalogue itself. "We have a new editor, Jane Lunn, who used to work as the mail order service. She knows the service, and as Commodore likes to encourage people to go into higher posts if they show talent she was the obvious choice." Jane's plans include giving the catalogue more of a "club" feel, encouraging a feeling of membership as well as emphasizing the financial benefits of joining VisiSoft.

"We're thinking of doing things like giving away letters, running competitions, having more programme lists, and so on," comments Jane. "We want to make the catalogue fun rather than just a list of software — something you can sit at and read through, perhaps pass around at school. Remember that in the case of the Visi, especially many of the readers are very young, and we want to give them more to enjoy."

Future

There's really no telling what VisiSoft will do next if growth continues at the present rate. Already Janet Richardson has taken on 16 people for the Corky plant, and when the move is complete VisiSoft can continue to expand in all directions.

Traveling back to Slough means even the last driver wanted to know what was going on — "Where you seen that last national Soccer game?" It asked — "It is as good as it's made out to be!" Another customer for VisiSoft? ■

NO DESIGNATED GAMING PLAYER can afford to be without a joystick. In some cases you'll find that there are no key control options given with a game, and sometimes they won't do you much good even if they are provided — the games are so complicated that you'd have to have an intricate play a machine in order to be able to play them.

Yet 32 and C64 64 owners are lucky that most computer users, so that they are joystick game provided in the machines —



Quickshot I — industry standard

so need to worry about standard. Since the standard Auto-type B joystick has been adopted by Commodore, there's no enormous choice available when you're shopping for joysticks. So here's a guide which will help you to choose the stick that's right for you — and show you how to reach the scores you've always dreamed of!

All joysticks are the same, right? Wrong! When you're choosing the one that's right for you, you'll have to take into account the size of the handle, the type of grip, the



Quickshot I — rapid fire

trigger type, any special gimmicks, and more.

Let's first look at an industry standard, the stick you'll find in every shop. The Spectravision Quickshot One is manufactured in America and distributed here by Valcon Electronics. It's a straightforward stick with a contoured grip

HARDWARE REVIEW

The joystick jury

Mega-tapping David Fox judges the games controllers

and fire buttons both on top of the handle and on the square base. Like all the other sticks reviewed here, I tried it out on Attridge's *Guardian* for the 64, an immediate implementation of the arcade classic *Defender* which requires the utmost skill in joystick control and quick firing.

The Quickshot One responds well to handling, and the fire buttons are unob-



Archie — joystick control

A great advantage is that the Quickshot One has four buttons which enable it to be attached to a fire surface. This makes it much easier to operate the additional keyboard controls which are required in many of the more complex arcade games. In *Guardian*, for instance, you need to operate *Hyperpace* and *Smart Bomb* controls as you fly your spaceship and operate the fire button for your laser beam. Being able to attach the stick securely means that it's much easier to operate a contended, and leave the other hand free. The base-mounted fire button makes left-handed operation easy. Quickshot One costs around £5.95.

Good points: Smooth response, buttons on base, fairly cheap.

Bad points: Probably wouldn't take rough handling.

Another from Spectravision, distributed by Valcon, is the comparatively named *Quickshot Two*. Again, this one has buttons on the base and a square body, with a contoured grip. It differs from the Quickshot One in two major respects:

Firstly, it has a front-mounted trigger fire button as well as a top-mounted thumb fire button, and, secondly, it has a rapid fire option switch built into the base.

I like the trigger-style fire button very much — I find it much easier to operate than a thumb-button. The rest of the Spectravision for putting the fire button where it should have been in the first place. The rapid fire option is perhaps not for points, since it gives you an unfair advantage. Simply switch to rapid fire and



Precision — precision

hold down the trigger, and the stick will fire as fast as your computer can manage. Better than being able to squeeze off about five shots per second is *Guardian* with the normal option. Rapid Fire means around 35! It may sound like cheating, but there's nothing quite like it if you want to survive more when more of attacking marauders and reach 100,000 points. Quickshot I costs £11.95.

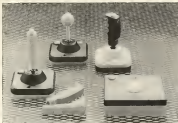
Good points: Trigger-style fire button, buttons on base, rapid fire option.



Precision Delta GC — precision

Bad points: Handle perhaps a little over sized for some players.

Another nice simple joystick is the *Archie*, made in Holland and distributed here by Dynamic. It has a simple wedge-shaped body which fits nicely on the hand, a single base-mounted fire button which is accessible from left or right-handed in-



The Woo range — 2 Way Red Ball, 2-Way and Doubleball

4-players, and a shaft topped with a moulded ball. The Arcade has a microswitch contact system which makes it very accurate indeed, and allows it to make a pleasant clicking sound in operation. The 2-Way is large and operates accurately. The Arcade costs £11.00.

Good points: Easy to hold, standard microswitch system, available in Commodore 64 colours.

Bad points: No buttons, though it does have one for rubber feet.

The Pro-Ace Competition joystick from Sunlock has a pyramid-shaped body surrounded by a ring, then handle. The base is on the top, and there's a base mounted fire button too. Although the control is flexed by the stick is very precise, there's very little movement in the handle. I never really got the feeling that I was flexing my spine further around the stick. The Pro-Ace costs £13.95.

Good points: Precise control, extremely durable.

Bad points: Little movement in handle, no buttons but rubber feet.

The Voltmax Delta 36C joystick makes a pleasant change: it has a flat rectangular base with three small fire buttons arranged in a triangle, and the handle is smooth and delicate. Again, not one for those of you who really like to get into the act of playing in space pilots, but with a little practice you can achieve very precise control. The Voltmax was originally designed for the Dragon computer, and is made in England — so if you want to be patriotic, in C10 this is the one to go for!

Good points: Very precise control with spring-returned stick.

Bad points: No button caps or rubber feet.

On one of the impressive ranges from Woo, who have gained more experience than any other games control man elsewhere through their work on actual arcade games. The Woo controllers are notable for their excellent construction and extremely high reliability. Distributed by Computer Games Limited, the Woo range leads off with the Beam Controller around £11, The Beam has a

very comfortable contoured grip with a flat-tapping top thumb-button. The shaft is precision-engineered steel, so you can really bash the one about — it should take anything you can dish it. The switch system works on a leaf principle, so as theory it's fast and reliable.

Good points: Well-engineered, nice grip.

Bad points: No buttons, but rubber feet.

In the Woo Command Control unit, the standard joystick is the Famous Red Ball. At £13, you'd have to be a dedicated games player to fork out for this one, but you'd be getting the best as far as engineering and precision are concerned. It's similar in construction to The Beam, but has a steel shaft with a large ball grip, on top of which is mounted the fire button. There's another button on the base, and a sliding switch which selects between the two — air a good idea as my view, since if you think you need you should be able to use

the beam trigger for a change.

The Famous Red Ball has a large base which I found uncomfortable to grip, but I suppose I could get used to it.

Good points: State-of-the-art engineering for great accuracy.

Bad points: Cost, poor mounting feet.

On to the Three-Way Deluxe joystick, which is basically a Red Ball with interchangeable handles. There's a contoured grip, a smooth baseball-bat shape and a thicker-shafted grip with a greenish like ball. At around £15 this stick would be recommended only to verify that authentic computer games. Though it has the same high standards of construction as the Red Ball, it seems more suitable to try to find a stick the shape of which suits you perfectly — after all, that shape of your hand doesn't change between games.

Good points: Well-engineered, choice of handles.

Bad points: Cost, tendency for handles to slip off stick if you push them too far.

The last Woo device isn't a joystick at all, but a Trackball. At around £11, the Trackball consists of a plastic sphere mounted in a heavy rectangular base. You control the movement of your spaceship for games, or whatever by rolling the ball. This allows you to control the speed as well as the direction of movement. The big disadvantage is that in order to keep something moving, you must keep rolling the ball — you can't just give it over hand to left and keep flying. The result is that the Trackball is pretty useless in a game such as Guard post, but would be perfect for games like Missile Command, the more going in which it first appeared. It's a pity there aren't any versions of Missile Command for the 64!

Good points: Interesting design method gives full velocity control.

Bad points: Cost — such limited applications.



Great showpiece — attractive joystick device in a "house"

Dart Electronics also offer a trackball, the **Masterplay**. Features are almost identical to the Winc, but the price is a much more attractive £18.99. The unit uses magnetic sensors, and, as Dart points out, therefore acts as an almost true analogue input — making it ideal for applications beyond games play, such as "mouse" functions.

Good points: Intuitive as trackball.

Bad points: Again, not suitable for all joystick games.

Back to more conventional joysticks with its modified design, the **Super Champ** from Dean Electronics. This redesigned joystick features a textured grip, buttons on the base, and built-in magnets and magnets for buttons. At £12 it's one of the best — a really good buy — I enjoyed using it despite the fact that it looks like some dubious medical aid. When you're finished playing, just twist the handle and the extra-long cable is wound onto the large circular base — no more tangled wires!

Good points: Buttons on base, trigger-style fire buttons, cable storage feature, extremely useful. Top seller in the UK for the last two years.

Bad points: Handle probably too big for some players, not something you'd want to leave lying around for Aimee to see.

Our last selection comes from the American Sensicon range, distributed here by Consumer Electronics Ltd. The emphasis of the range seems to be on small, well-engineered sticks which concentrate on performance rather than flash. The **Starfighter** has a small square black base

with a short shaft with a rounded end. The fire button is on the left of the base top. Remarkably easy to hold because of its rounded edges and light weight, the **Starfighter** is fast and accurate, and costs around £11.95.

Good points: Easy to hold, good response, very light and small.

Bad points: No good for left-handers?

Sensicon's **Tac-It** (Totally Accurate Controller) solves the problem for left-handers — featuring a base only slightly larger and heavier than the **Starfighter**, with the same excellent response, it has in addition a steel shaft with a ball end, and an extra fire button on the base. Cost is around £18.95.

Good points: Light, easy to hold, good response, suitable for left or right-handers.

Bad points: A little expensive, rather awkward non-slip feet.

Half-way between the two is the **Trackball**, which combines the **Starfighter**'s base and single fire button with the **Tac-It**'s shaft and ball grip. At £9.95, the **Trackball** combines the good and bad features of the two others, namely,

Good points: Light and accurate, well-registered.

Bad points: No good for left-handers, again — they seem to be missing out!

The last in our menagerie round up of joysticks is, like the **Trackball**, not a joystick at all — it's a joystick simulator. What, I hear you say, how can you simulate a joystick? Well, the Sensicon **Joy Sensor** is an electronic touch-sensitive controller. The lightest of touches on the circular



Super Champ — a winner

touch pad set in to create a response. A sliding switch controls whether movement is free (single in eight directions, which is handy for selecting buttons, say, space games such as *Quadrant* or *Pacman*-style maze games where your choice of direction is limited).

The **Joy Sensor** also has touch-sensitive fire controls, ordinary ones on right and left and rapid fire in the middle. I've already commented on the advantages of rapid fire, so those of you with an excellent scratch about moving down the console to find out the structure of the **Joy Sensor**. It's very difficult to learn the discipline of moving your thumb around on the pad, but once mastered this controller is great to use. Moves are much faster because there's no mechanical resistance to overcome, and the **Joy Sensor** should be almost impossible to wear! Best selling now £25.95 save.

Finally, although I'd choose the **Super Champ** or **Quadrant Two** if I were forced to pick a winner, it's worth saying that you can only pick the stick that's right for you by trying out as many as you can. Just don't mention my name to the shop assistant!

Contacts

Volcan Electronics Ltd, 100 Broom Street, London, SE1-2NS 4366

Dynatron Marketing Ltd, Unit 15, Colling Close, Ilkley, Manchester, 044-775-1437

Sunstick, 194 Deansgate, Manchester, 061-834-4233

Voltronic, Park Drive, Balloch, Hants, 0462-494418

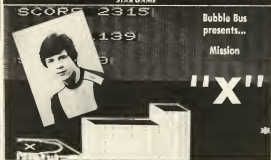
Computer Games Ltd, GSE, Hounley, Gillingham, 0463-273915

Dart Electronics, Elmfield Park, Farnham Road, Asen, Dorset, 0948-476660

Consumer Electronics Ltd, Fallowfield, Manchester, M15 6H5 061-432 3359



Sensicon range — **Starfighter**, **Trackball**, **Tac-It**, **Joy Sensor**



An exciting Vic 20 game written by young star programmer Richard Clark of Bubble Bus Software

BUBBLE BUS SOFTWARE lives in a converted garage close to the M25 in Twickenham, and has off its computers contains a Vic 20 game from star programmer Richard Clark.

Richard worked from Bubble Bus' office at the age of 16 with a stack of programs being his portfolio. Bubble Bus asked Richard to write a program, *Bumping Buggles*, which moved into one of the company's biggest successes.

Richard started programming at the ZX81, and moved onto the Vic 20 two years ago. He taught himself machine code programming, then graduated to the 64. Writing *Bumping Buggles* took him three months, working at weekends.

Now that Richard's finished his science 'O' levels, Bubble Bus is taking him on full time in a 64 programme.

His next project is *Caveat Fighter*, in which the player takes on the role of an ill-fated explorer landing different machines in a complex of caves.

As for Bubble Bus, the company, which started two years ago producing Vic utilities, is now concentrating more on games. With the success of the post-competition *Wanderer* for the 64, and the popular *Dark 128*, single writers by Nick

Remage, Bubble Bus has established a reputation which continues to grow. Forthcoming projects include *Snake Faces*, a war simulation by Pauline Warren Terry Owen, and the unique package *Quadrillions*, which includes *Word Wizard*, *Power Printer*, *Label Printer* and *Advertiser* on one disk.

Bubble Bus will continue to work on the 64, although 128K and Sinclair machines also figure in future plans.

Mission X, once the full potential of the underpriced Vic 20. It's a fast-moving 3-D game featuring impressive use of sound and colour.

It's a three-stage game, in which the first part involves using your space fighter to knock flags off the top of enemy installations. Once this has been done the next step is to defend by passing through as many fuel guns as possible. Finally you have to land your craft on the landing.

Use F1 for forward thrust, and F3 to keep the ship level. Use number and the ship begins to fall. Each flag scores 100 when the flag number. Going through a fuel gun scores 200 and 50 fuel units. Completing a level scores remaining fuel times the level number.

There are eight levels of difficulty, with

the height of the buildings becoming more varied and more stars appearing in the fuel gun section.

The program is in two parts. You should first type in program one, and save it as *MISSION X*. Then type in program two and save it after the first part. To load in the game just load and run the first program, and it will load in the main section.

The first program sets up the default graphics and a small machine code screen scrolling routine, and the second program is the actual game.

190:120 Set up variables
230:140 Set up game display
300 Access word routine
310 Check for collisions
340 Display graphics
400 Call screen display routine
410 Update and display score
500:520 Check for keyboard input
540 Check for fuel gun
1000-1400 Display buildings and flags
1500-1550 Display fuel guns
2000-2440 Display landing pad
2450-2455 Check for crash
4000-4010 Completed level

Take your place in the cockpit, and good luck with *Mission X*!

```
1:POKE46,26:POKE49,249:PRINTCHR$(CLR
2:POKE91,8:POKE92,26:POKE93,0:POKE94,16
3:GOSUB3500
10:FORL=67320673+72:REPEAT:POKEL,X:NEXT
20:DATA72,192,72,130,73,56,149,326,133,87,169,96,133,86,165,87,230,1,130
30:DATA99,165,89,230,46,133,96,162,12,166,26,136,177,89,145,87,136,280
40:DATA249,169,32,149,87,24,169,87,165,22,153,87,144,2,239,89,24,165,89,195,22
50:DATA133,89,144,2,239,96,280,269,217,184,178,184,160,194,96
60:FORR=7168707673:POKEY,PEEK(R+22626):NEXT
```


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On the beach

Can you establish a beach head, save Emeralds and go 10 rounds with a boxing champion? Find out in **Pete Gerrard's** latest games review



DISPECTORED the ancient adage that you can't teach an old dog new tricks. There EMU continue to produce some interesting games for the Vic 20 (filled with IC dependent).

One of their newer offerings is the very good **Beach Commander**, which would have supported a "true" version, if it wasn't for the fact that my copy of the program managed to crash every time I played it. Must be the hot weather.

You are in sole charge of a tank, and needless to say your mission is to destroy all the enemy tanks, and in particular you have to keep an eye out for two things: one ammunition and one fuel one. Destroying these two takes you onto the next level of play, where ever more enemies are out to prevent you completing your mission.

Some games do give you the trump while playing them, and **Beach Commander** is one of them. An exciting cover to the cassette video box that accompanies the cassette hints at a wealth of goodness about the game. The description on the back of the cover also suggests that you are about to witness the most intense game that you've ever seen on a Vic 20. But personally, I found the almost as exciting as watching **BeachTV**.

You double start to creep in scared about the fact when the instructions tell you to remove all memory expansion from your Vic, while the cassette informs you that the game requires 64 memory expansion. Something appears to have gone

wrong somewhere, since it shows in fact need 64 of your memory.

As **Beach Commander**, it is your job to rescue the pretty guppy girl **Emeralds**, who is about to be lapped by the wicked **Green Guppy**. The railway has been taken **Quadrant** is apparently an ally since **Beach Commander**, I wouldn't have thought that **Beach Commander** would have been so pleased about being rescued by him, but there you are.

Between different levels of play, it says: You have to race across these fifteen different levels in order to reach the spot where the extension of **Beach Commander** is about to take place. With enemy guards after you, bombs being hurled in all directions, and spurs being thrown about the place, this seems to be no easy task.

Supplied by **Advanced Computer Entertainment**, who have produced some interesting stuff for the Commodore 64, this is not one of life's games. There's far better stuff around.

Revelation

Once the Commodore 64 was, with **Revelation**, from the company that brought you **Right**, the story of the mad scientist who goes around punching apps from **Beach Commander**. Yes, I wish we as it again, and this is another game that is interesting without being overwhelming.

The cassette cover hints at a game of light-line proportions depicting scenes from **Beach Commander** in moonlight, with flying boats and fire-breathing dragons sailing

the seascape. However, the game itself comes over as a series between **Beach Commander** and **Space Invaders**.

They use different weapons against the enemy screens that you have to destroy before meeting the major **Beach Commander** goal. I hope he's worth the wait, since I never managed to get that far. In each screen are a number of orders which have to be destroyed before you can finish off all the enemies living on that level. With a nice graphical touch, everything scrolls around the screen at a reasonable speed as you move around choosing the codes and shooting or dodging the monsters.

As far as I'm concerned, **Beach Commander** can go and take a running jump, since the knowledge that you are in the game everywhere these days, and there is such a thing as overkill. However, **Beach Commander**, originally a Spectrum game from **Midway Games**, has now made the transition over to the Commodore 64.

As with some other notable games that have appeared on the 64 after working their way out on the Spectrum, nothing much seems to have changed here. You're in charge of **Beach Commander**, a cool little space, who decides to go along. To do that he must first of all see his little **Beach Commander** as a **Beach Commander** from the local shop on the other side of a busy highway.

Using keyboard or joystick you must manoeuvre **Beach Commander** across the road, watching out for the fast moving **Beach Commander** and the slow moving **Beach Commander** reveal along at an intermediate pace.

and should Blaster be unfortunate enough to collide with one of them another run of your original 40 dollars gets eaten (it includes five levels). Here, collisions are never fatal, and the game only ends when you run out of money. Blaster got across the road and entered the ski shop. You've then got to get back across the road once more before getting into the ski shops themselves.

Here there are few hazards, other than Blaster's inability to do as he's told. Turn left or right every now and again as you race down the ski slope course, and a collision with one of them may or may not break your skin, depending on your fortune at the time. Missing a set of flags upon some points from your total, and there are also a number of edges lying around that threaten you wretchedly off course should you happen to bump into one.

Following the course sees you back at the ski shop, and at last a trip across the road once more before getting into the second ski run.

There's only marginally different from the first, and presumably the rest of them follow suit. Should you be unlucky enough to break your skin, you start off on the wrong side of the road again. A little thought on the part of the programmer could have turned this very ordinary game into quite a good one, as a number of silly things seem to have been put into a Pac-Man-like, running out of money track the game, but not wisely. You can spend ages trying to get across the road in the ski shop, thinking that you're actually getting somewhere. Only when you're inside the



Distance 2 — a space battle (it seems) in a real multi-colored background

ship are you told that you're no money to turn the ski and the game ends in a halt.

U.S. Gold is a label that is important to a lot of very good American 84 software, and **Break Head** from Access Software is one of their latest efforts. Available on cassettes tape or disk (we had the tape version, unfortunately), it is supplied in this country by Commodore, who've had the good sense to put it out in native land format, as good as they prefer to call it.

You are in charge of a fleet of ten ships, whose objective is to reach the shore and

land an attack force to destroy the enemy 190.

In this multi-stage game, the first has you manoeuvring your fleet (represented by 4 little ships) around a harbour. There are two passages into the harbour, and what is referred to as the hidden passage is the one to go for, since this catches the enemy on the lops and means that future levels are a little easier. However, getting through this passage requires a better Captain than I, and with the subtlety of a changing ball I missed the enemy's



400 Maphead is one of those games that is definitely worth it

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1471988, 1471989, 1471990, 1471991, 1471992, 1471993, 1471994, 1471995, 1471996, 1471997, 1471998, 1471999, 1472000, 1472001, 1472002, 1472003, 1472004, 1472005, 1472006, 1472007, 1472008, 1472009, 1472010, 1472011, 1472012, 1472013, 1472014, 1472015, 1472016, 1472017, 1472018, 1472019, 1472020, 1472021, 1472022, 1472023, 1472024, 1472025, 1472026, 1472027, 1472028, 1472029, 1472030, 1472031, 1472032, 1472033, 1472034, 1472035, 1472036, 1472037, 1472038, 1472039, 1472040, 1472041, 1472042, 1472043, 1472044, 1472045, 1472046, 1472047, 1472048, 1472049, 1472050, 1472051, 1472052, 1472053, 1472054, 1472055, 1472056, 1472057, 1472058, 1472059, 1472060, 1472061, 1472062, 1472063, 1472064, 1472065, 1472066, 1472067, 1472068, 1472069, 1472070, 1472071, 1472072, 1472073, 1472074, 1472075, 1472076, 1472077, 1472078, 1472079, 1472080, 1472081, 1472082, 1472083, 1472084, 1472085, 1472086, 1472087, 1472088, 1472089, 1472090, 1472091, 1472092, 1472093, 1472094, 1472095, 1472096, 1472097, 1472098, 1472099, 1472100, 1472101, 1472102, 1472103, 1472104, 1472105, 1472106, 1472107, 1472108, 1472109, 1472110, 1472111, 1472112, 1472113, 1472114, 1472115, 1472116, 1472117, 1472118, 1472119, 1472120, 1472121, 1472122, 1472123, 1472124, 1472125, 1472126, 1472127, 1472128, 1472129, 1472130, 1472131, 1472132, 1472133, 1472134, 1472135, 1472136, 1472137, 1472138, 1472139, 1472140, 1472141, 1472142, 1472143, 1472144, 1472145, 1472146, 1472147, 1472148, 1472149, 1472150, 1472151, 1472152, 1472153, 1472154, 1472155, 1472156, 1472157, 1472158, 1472159, 1472160, 1472161, 1472162, 1472163, 1472164, 1472165, 1472166, 1472167, 1472168, 1472169, 1472170, 1472171, 1472172, 1472173, 1472174, 1472175, 1472176, 1472177, 1472178, 1472179, 1472180, 1472181, 1472182, 1472183, 1472184, 1472185, 1472186, 1472187, 1472188, 1472189, 1472190, 1472191, 1472192, 1472193, 1472194, 1472195, 1472196, 1472197, 1472198, 1472199, 1472200, 1472201, 1472202, 1472203, 1472204, 1472205, 1472206, 1472207, 1472208, 1472209, 1472210, 1472211, 1472212, 1472213, 1472214, 1472215, 1472216, 1472217, 1472218, 1472219, 1472220, 1472221, 1472222, 1472223, 1472224, 1472225, 1472226, 1472227, 1472228, 1472229, 1472230, 1472231, 1472232, 1472233, 1472234, 1472235, 1472236, 1472237, 1472238, 1472239, 1472240, 1472241, 1472242, 1472243, 1472244, 1472245, 1472246, 1472247, 1472248, 1472249, 1472250, 1472251, 1472252, 1472253, 1472254, 1472255, 1472256, 1472257, 1472258, 1472259, 1472260, 1472261, 1472262, 1472263, 1472264, 1472265, 1472266, 1472267, 1472268, 1472269, 1472270, 1472271, 1472272, 1472273, 1472274, 1472275, 1472276, 1472277, 1472278, 1472279, 1472280, 1472281, 1472282, 1472283, 1472284, 1472285, 1472286, 1472287, 1472288, 1472289, 1472290, 1472291, 1472292, 1472293, 1472294, 1472295, 1472296, 1472297, 1472298, 1472299, 1472300, 1472301, 1472302, 1472303, 14



Boulder Dash — from the company that brought you Dig!

4-foot head on each side

This brings you to screen 3, where your ship is under bombardment from enemy aircraft, and must duly respond in an anti-aircraft gun. Some stunning graphics here, as your first combat under a continuous barrage from the enemy. From here to next a reconnaissance plane flies forward, showing that down towards a healthy bonus, but usually distracts you from the task at hand and you lose a couple of other ships.

Well off

This scene seems to continue for ever, and it is a great relief when you finally move onto the next one. Here the enemy ships themselves are firing at you, and moving your gun up and down determines how far your retaliatory shots will go off. A screen read-out shows you your angle of elevation and how far out your last shot was. Soon half a degree of elevation is equivalent to 800 metres travelling distance. For your shots, you can even work out what new angle to fire from.

If you manage to emerge from this level with a few ships left, each ship magically changes into two tanks and a spot of land. Fighting takes place before you reach the enemy stronghold and the object of the game. According to the instructions you don't have to shoot the fortress down as the final level, but this appears to be impossible. I failed every time.

A good and challenging game that is well worth considering for any 64 owner tired of Space Invaders and Asteroids games.

Running on one or two from E.Tel. I.C. Wiggins has released a double sided tape for the Commodore 64. One side

teaches about this package so that you're ready on the instant tape and how long the program takes to load (quite remarkable) please note.

Collectors It is a space battle, which takes place over a hard multi-colour high resolution background, which has planets and meteors of every colour in the rainbow hanging around in real space. This is presumably there to make the game look visually interesting, since nothing else of note happens. You control a spaceship, which has the standard task of saving the universe. The enemy obligingly only send one enemy craft at you at a time, and so far as I could tell that was all there was to do in the entire game. Shoot your opponent, one space-ship at a time, and just keep shooting up the points.

Boeing, on each level, was a little better, although it took me quite a while to figure out that the two screens being used were meant to be actual shots of two hours in action, they look quite strange when you first see them.

The idea in this two player game is just to move your tanks around the map and shoot the firing displays out of your opponent. The graphics look quite ridiculous when both players are throwing punches, and it's almost worth buying you to see them in action.

An interesting feature of Boeing is that should you or your opponent be forced onto the ropes, the relevant character is placed immediately back into their own corner, to start again. Points are scored for the number of bombs dropped and the number of times that you can force your opponent to hit the ropes, and the last man

at the end of ten rounds wins.

A notable effort to give value for money, but there are much better programs around.

Mr. Mophem is one of those games that is needlessly addictive, and one that deserves consideration for a place in your own software library. It's by a new company called neo-ops.

You are trying to reach the point of Heaven, in the increasing numbers to the game. Unfortunately for you the way to the gate is blocked by demons and fearsome ghosts, and the stairways that you must walk up to progress onto further levels are, like problems, continuously moving the wrong way. Thus, in your efforts to dodge the demons and keep out of the way of everything else, you forget to carry on moving upwards and the stairs from you back into the burning steps of Hell, so the demons above finally descend on

Next level

You control a newly recruited man, and your job is to move him about the place, walking up the moving stairs and avoiding the demons as you go. On each screen there are one or more objects to be picked up, and getting hold of these allows you access to the next level of play.

The designers may make the program sound a little like Mass Effect and others of this ilk, but it isn't.

Four speed levels are used (along with three different levels of play), to add interest to the game, and all told that is just all the better new releases for the Commodore 64. ■

Making the most of your 64's memory

Relocating the character set and moving the screen can make additional memory available on the 64. David Bafton explains how to create an extra 1K of ram for programming

THIS ARTICLE will show you how to increase the memory of your Commodore 64 to almost 48K of ram, an extra 1024 bytes over the normal.

Commodore 64 Basic starts off with the screen occupying ram from locations 8000 to 8040. If we can move this elsewhere then we can clear the start of Basic pointers, and gain an extra 1K.

The main problem is that the screen must be moved completely out of the first 40K of memory. The ideal spot turns out to be in the unused 4K of ram from 49000 to 49040.

Because of the way the VIC chip works in banks of 16K, we will also have to move the character set so that it falls into the same bank. This affects sprites, but not badly, and we'll deal with these later.

I have chosen 49000 to 49040 for the character set with the screen starting after that at location 50000 to 50040.

Changing the ram address is a very simple task as only three pointers are needed. POKE 34756,49 changes the bank that the VIC chip looks at, POKE 50070,0 changes screen and character set positions and POKE 649,300 tells the 64 where the screen is for purposes of writing to it. The last pointer is necessary, otherwise the 64 would think the screen was still at 8000 while displaying 10000 to 50000 which is a very confusing situation.

The character set also has to be relocated, so to make life simple I have

included a short machine code program (listing next) which moves the complete character set, changes the screen, and all in the blink of an eyelid!

Have you ever typed this in, saw it before running it. I have included a "cheat-sheet" which will tell you if the BASIC statements are wrong. If it works correctly it will say FOR NEW CHAR SET JUST TYPE SYS 640.

When you do this SYS the screen will be full of garbage. Just clear the screen and it will be OK. You can check that the screen has moved by hitting the [HOLD] key and putting a "u" in the top left corner. Now enter POKE 33300,49 and you will see the "u" change to a 9.

Colour memory is not changed, it is still at 55194. If however you do a RUN-STOP and RESTORE you will get funny letters appearing on screen. Type in SYS 640 (it will look strange but don't stop), press RETURN and all will be as it should be.

Sprites are now stored in so where they are stored. Instead of using locations 5040 to 5047 for the sprite pointers, you use 522400-522437. The values in these pointers (0 to 255) now refer to memory locations 49000 to 49039 in steps of 64. POKE 52240,49 will set the sprite pattern at 04940-49039 to 50000 for sprite two.

Program two is rather large and contains

in the main of data statements. This contains a brand new character set for the 64. It has its own pointer for changing memory around so you don't need to set program one first. Just load and run program two.

This only contains half of the character set. The reverse characters are obtained by subtracting each of the bytes from 255. If you don't want reverse characters then you could use the ram from 50400 to 50499 for sprite patterns (locations 14 to 31), but if you do want them then enter and run the line of Basic:

```
FOR I = 0 TO 16384:POKE 50076+I, 255-PEEK(49000+I):NEXT I
```

Program one copies in a full character set with reverse characters. If you don't want reverse, then change the 16 which is five bytes from the end of line 41 into an eight (8) and alter 04940 in line 33 to 04935.

Now to gain the extra 1K of memory just enter the following line:

```
POKE 44,POKE 1004,0:NEW
```

The first pointer changes the start of Basic to (4*256 = 1024) and the second one that to zero otherwise you will get SYNTAX ERROR.

This will keep any program at memory so be careful and save it now first.

If you now PRINT PEEK(0) you will get —25400 which really means 10950 bytes free (just add 45000). Now you can have even bigger arrays! ■

Program 1

```
10 @=640
20 FOR I=50076:POKE I, A: I=I+64:NEXT
30 IF P<=10483 THEN PRINT "DATA SPRITE" :STOP
40 PRINT "FOR NEW CHAR SET JUST TYPE"
50 PRINT "SYS 640"
60 END
40 DATA 49,0,141,207,2,149,208,141,208,2,149,0,141,210,2,149,192,149,211,2,173
45 DATA 149,208,45,204,141,14,220,140,1,41,231,133,1,162,0,160,16,189,0,214,257
50 DATA 0,200,233,208,247,208,208,2,238,211,2,134,208,238,145,1,9,4,133,1,175
55 DATA 14,208,9,1,141,14,220,149,33,145,24,208,149,68,141,0,231,149,208,141
60 DATA 156,2,94
```


COMMODORE SOFTWARE FILE

IT HAS BEEN brought to our attention by Melbourne House, as well as by a number of readers, that two programs published in the August issue of *Commodore Newsletter* are not original. The programs, the Star Game Night Plot, and the Software File entry for Captain, are in fact taken from the well-known Melbourne House publications *The Commodore 64 Games Book* by Clifford and Mark Barnham. Although we encourage readers to send us programs for the disk and the Via for our Software File and Star Game sections, we must stress that programs taken from books and magazines are not acceptable, since the copyrights for these programs is owed by the authors and publishers.

The apertures in Melbourne House and to Clifford and Mark Ranshaw. Obviously we can't keep up with all the listings published in the hundreds of computer books and magazines available — but someone is bound to spot a "repped-off" program if we publish it. No shame involved — no real loss, necessarily, either.

Lettersort

Frank Murphy from School District

LETTER SORT is an original game in which you have to rearrange the letters in a word into alphabetical order. You can move the letters using a joystick or the keys W, A, D and S.

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the letters into the right order, press the five buttons at the "E" sign. If you try to cheat, the computer displays an appropriate message and sound. If you get it right, a familiar sound and your letter and number will move to the next.

[illegible]

1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 2680, 26



Mastercode Assembler

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```

205 PRINT "XXXXXXXXXXXXXXXXXXXXX"
210 IF (RND4)=8 THEN GOSUB 400
220 IF (RND8)=8 THEN GOSUB 400
231 IF R4="Z" THEN GOSUB 400
230 IF (RND128)=8 THEN GOSUB 700
231 IF R8="H" THEN GOSUB 600
240 IF (RND16)=8 THEN GOSUB 600
241 IF R4="D" THEN GOSUB 700
250 IF (RND32)=8 THEN GOTO 600
251 IF R8="R" THEN GOSUB 600
260 GOTO 200
260 PRINT "XXXXXXXXXXXXXXXXXXXXX"
310 FOR M=1 TO 4
320 PRINT "XXXXXXXXXXXXXXXXXXXXX"
330 PRINT "XXXXXXXXXXXXXXXXXXXXX"
340 NEXT M
350 PRINT "XXXXXXXXXXXXXXXXXXXXX"
360 PRINT "XXXXXXXXXXXXXXXXXXXXX"
370 POKE 7508,42: POKE 8578,6
380 RETURN
400 IF R=44:G7727 THEN RETURN
410 P=PEEK(R+44): FOR R4,P:POKE R+4,6: R=R+44
420 POKE R,32: TR=TR+1: FOR G=1 TO 50: NEXT
430 RETURN
500 IF R=44:G7727 THEN RETURN
510 P=PEEK(R+44): POKE R,P:POKE R+4,6: R=R+44
520 POKE R,32: TR=TR+1: FOR G=1 TO 50: NEXT
530 RETURN
600 IF R=7783 THEN G10
601 IF R=7817 AND R=7827 THEN G20
602 IF R=7861 AND R=7871 THEN G30
603 IF R=7905 AND R=7915 THEN G40
604 IF R=2:G788 THEN G700
605 GOTO 650
610 IF R=2:G783 THEN G700
615 GOTO 650
620 IF R=2:G782 THEN G700
625 GOTO 650
630 IF R=2:G7871 THEN G700
635 GOTO 650
640 IF R=2:G7915 THEN G700
650 P=PEEK(R+2): POKE R,P:POKE R+4,6: R=R+2
660 POKE R,32: TR=TR+1: FOR G=1 TO 50: NEXT
670 RETURN
700 IF R=7783 THEN G10
701 IF R=7817 AND R=7827 THEN G20
702 IF R=7861 AND R=7871 THEN G30
703 IF R=7905 AND R=7915 THEN G40
704 IF R=2:G7949 THEN G700
705 GOTO 750
710 IF R=2:G7773 THEN G700
715 GOTO 750
720 IF R=2:G7817 THEN G700
725 GOTO 750
730 IF R=2:G7861 THEN G700
735 GOTO 750
740 IF R=2:G7905 THEN G700
750 P=PEEK(R+2): POKE R,P:POKE R+4,6: R=R+2
760 POKE R,32: TR=TR+1: FOR G=1 TO 50: NEXT
770 RETURN
800 TTT4=TT4: SD=0: FOR R=7774:G7956:STEP 2
801 CC=PEEK(R)
802 IF CC=32:POKE R=64:POKE R=32:POKE R=102 THEN G805
803 IF CC=102 THEN R=755: PRINT "NICE HIT"
804 IF CC=102 THEN PRINT "N"

```

Continued on page 49

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```

1020 POKE2,207 FORQ=1T0150 NEXT
1030 POKE2,191 FORQ=1T0350 NEXT
1040 POKE2,175 FORQ=1T01400 NEXT
1050 POKE2,0
1060 RETURN
2000 POKE2,215 FORQ=1T0400 NEXT FORQ=1T04
2010 POKE2,215 FORQ=1T0500 NEXT
2020 POKE2,215 FORQ=1T0750 NEXT
2030 POKE2,225 FORQ=1T0500 NEXT
2040 NEXT
2050 POKE2,215 FORQ=1T0400 NEXT
2070 POKE2,0 FORQ=1T02000 NEXT RETURN
3000 FORV=1T04 POKE2,230 FORV=1T05 NEXT POKE2,0 FORV=1T0500 NEXT
3010 POKE2,200 FORV=1T05 NEXT POKE2,0 FORV=1T0500 NEXT NEXT
3020 RETURN

```

Melody

This *Vic 20* program comes from *Osborne's* audio frequency generator. The more information is contained in the data statements. Just type the program in and make full use of all three of the *Vic's* play areas.

```

0 GOSUB21
1 REPR IF#=-1THENPOKE36876,8 POKE36874,8 POKE36875,8 GOTO24
2 POKE36876,8 R=R+1 IFR>3THENPOKE36875,8 R=0
3 FORT=1T0300STEP=.4 POKE36878,T NEXTT POKE36874,0
4 POKE36875,8 U=U+1 IFU>5THENPOKE36874,8 U=0
5 GOTO1
6 DATA195,195
7 DATA195,195,195,195,195,195,195,207
8 DATA201,195,201,195,201,195,191,183
9 DATA191,183,191,183,207,183,179,183
10 DATA207,207,195,195,201,204
11 DATA201,195,195,201,204,215,201,204
12 DATA195,215,215,209,207,207,204
13 DATA207,207,204,207,207,204,207
14 DATA215,207,215,209,201,201,201,199
15 DATA201,201,199,201,209,207,201,207
16 DATA215,215,215,219,201,204,207
17 DATA207,204,207,209,207,201,191,201
18 DATA195,195,195,191,195,204,201,195
19 DATA215,195,201,207,215,195,201,207
20 DATA215,195,207,201,195,-1
21 PRINT"J MELODY BY S.TAYLOR"
22 PRINT"X ON ANY COMMODORE"
23 PRINT"X VIC-20" RETURN
24 PRINT"### ANOTHER SPIN (Y/N)" POKE198,8
25 GET# IF#="Y"THENG3
26 IF#="Y"THENRESTORE GOTO8
27 IF#="N"THENSYS64002
28 PRINT"X PARDON"
29 FORT=1T01000 NEXT RESTORE PRINT"Z" GOTO8

```

Meteors

A program for the un-spoiled *Vic 20* from Andrew Levens of Newcastle. METEORS was published in our August issue with several bugs cut off the end.

Our apologies to those of you who couldn't understand why it didn't work! Here are the missing lines. Send us as soon as you want a full listing.

```

730 RETURN
800 PRINT"#####YOU SCORED",SC POKE36879,27 PRINT"###DO YOU WANT ANOTHER GO?"
810 INPUT"#####Y/N":R#0
820 IF#="N"OR#="Q"Y"THENR#0
830 IF#="Y"THENSUN
940 PRINT"ZF POKE36879,27 POKE388,0 END
1000 POKE36879,0 PRINT"ZF"
1005 PRINT"#####"

```

Continued on page 40

```

1010 PRINT "*****DEAR ATTACK * * * * *
1020 PRINT "*****A. LOVATT * * * * *
1030 PRINT "*****AFFORDSHIRE * * * * *
1040 PRINT "*****MURRY 1984 * * * * *
1050 PRINT "*****"
1060 PRINT "### DO YOU REQUIRE INSTRUCTIONS (Y/N)?"
1070 GETIN: IF IN$="" THEN 1075
1080 IF IN$="Y" THEN IN$="N" THEN IN$
1090 IF IN$="N" THEN RETURN
1100 PRINT "I"
1110 PRINT "*****INSTRUCTIONS
1120 PRINT "### YOU (###) ARE IN OUTERSPACE AND ARE BEING"
1130 PRINT "HARIED BY METEORS WHICH FLY AT YOU FROM RANDOM POSITIONS."
1140 PRINT "### YOU ARE TO HOLD THEM BEFORE THEY DESTROYED. ###"
1150 PRINT "BY SHOOTING THEM BUT YOU LOSE A LIFE IF "
1160 PRINT "THEY MANAGE TO PASS YOU. YOUR LIVES DEPEND ON THE SKILL LEVEL YOU"
1170 PRINT "CHOOSE. 1-1 LIFE 2-GLVES ETC. UP TO 5".
1180 PRINT "*****PRESS ANY KEY"
1190 GETIN: IF IN$="" THEN 1200
1200 PRINT "### METEOR ATTACK ###"
1210 PRINT "*****CONTROLS... "
1220 PRINT "*****UP-SPACE-DOWN-SPACE-FIRE"
1230 PRINT "*****PRESS ANY KEY"
1240 GETIN: IF IN$="" THEN 1250
1250 RETURN

```

based on your Government's previous collecting in cassette and is utilized in other public areas of service. And

Listing must be accompanied by a typewritten introduction describing the program and explaining how it is constructed. We pay \$5.00 for each bug-free listing published. We cannot guarantee to return every program submitted, so please keep a copy. If you want us to return your listing you must include a stamped, addressed envelope. If you have any problems with the program, please write to the appropriate author. Authors: Please

Esmeralda Herrera 13/13 Little Newport Street London WC2E 8AF

DUCKWORTH BONE CONCRETE

ACCEPTED MANUSCRIPT

1000

For the more serious user of the *Compendium*, 24 (the book) contains you all about programming in Modula-2 with many an interesting exercise (although) no solutions, along with names of libraries covering the system (names) of the *Compendium* 24.

This is a very important book for students. In terms of the conceptual framework, it is a guide to understanding how these processes are integrated, along with the important concepts. The book is written in a very clear and concise manner, and it is a very good reference for students. The book is written in a very clear and concise manner, and it is a very good reference for students. The book is written in a very clear and concise manner, and it is a very good reference for students.

1998 2001 2004 2007 2010 2013 2016 2019 2022 2025 2028 2031 2034 2037 2040 2043 2046 2049 2052 2055 2058 2061 2064 2067 2070 2073 2076 2079 2082 2085 2088 2091 2094 2097 2100 2103 2106 2109 2112 2115 2118 2121 2124 2127 2130 2133 2136 2139 2142 2145 2148 2151 2154 2157 2160 2163 2166 2169 2172 2175 2178 2181 2184 2187 2190 2193 2196 2199 2202 2205 2208 2211 2214 2217 2220 2223 2226 2229 2232 2235 2238 2241 2244 2247 2250 2253 2256 2259 2262 2265 2268 2271 2274 2277 2280 2283 2286 2289 2292 2295 2298 2301 2304 2307 2310 2313 2316 2319 2322 2325 2328 2331 2334 2337 2340 2343 2346 2349 2352 2355 2358 2361 2364 2367 2370 2373 2376 2379 2382 2385 2388 2391 2394 2397 2400 2403 2406 2409 2412 2415 2418 2421 2424 2427 2430 2433 2436 2439 2442 2445 2448 2451 2454 2457 2460 2463 2466 2469 2472 2475 2478 2481 2484 2487 2490 2493 2496 2499 2502 2505 2508 2511 2514 2517 2520 2523 2526 2529 2532 2535 2538 2541 2544 2547 2550 2553 2556 2559 2562 2565 2568 2571 2574 2577 2580 2583 2586 2589 2592 2595 2598 2601 2604 2607 2610 2613 2616 2619 2622 2625 2628 2631 2634 2637 2640 2643 2646 2649 2652 2655 2658 2661 2664 2667 2670 2673 2676 2679 2682 2685 2688 2691 2694 2697 2700 2703 2706 2709 2712 2715 2718 2721 2724 2727 2730 2733 2736 2739 2742 2745 2748 2751 2754 2757 2760 2763 2766 2769 2772 2775 2778 2781 2784 2787 2790 2793 2796 2799 2802 2805 2808 2811 2814 2817 2820 2823 2826 2829 2832 2835 2838 2841 2844 2847 2850 2853 2856 2859 2862 2865 2868 2871 2874 2877 2880 2883 2886 2889 2892 2895 2898 2901 2904 2907 2910 2913 2916 2919 2922 2925 2928 2931 2934 2937 2940 2943 2946 2949 2952 2955 2958 2961 2964 2967 2970 2973 2976 2979 2982 2985 2988 2991 2994 2997 3000 3003 3006 3009 3012 3015 3018 3021 3024 3027 3030 3033 3036 3039 3042 3045 3048 3051 3054 3057 3060 3063 3066 3069 3072 3075 3078 3081 3084 3087 3090 3093 3096 3099 3102 3105 3108 3111 3114 3117 3120 3123 3126 3129 3132 3135 3138 3141 3144 3147 3150 3153 3156 3159 3162 3165 3168 3171 3174 3177 3180 3183 3186 3189 3192 3195 3198 3201 3204 3207 3210 3213 3216 3219 3222 3225 3228 3231 3234 3237 3240 3243 3246 3249 3252 3255 3258 3261 3264 3267 3270 3273 3276 3279 3282 3285 3288 3291 3294 3297 3300 3303 3306 3309 3312 3315 3318 3321 3324 3327 3330 3333 3336 3339 3342 3345 3348 3351 3354 3357 3360 3363 3366 3369 3372 3375 3378 3381 3384 3387 3390 3393 3396 3399 3402 3405 3408 3411 3414 3417 3420 3423 3426 3429 3432 3435 3438 3441 3444 3447 3450 3453 3456 3459 3462 3465 3468 3471 3474 3477 3480 3483 3486 3489 3492 3495 3498 3501 3504 3507 3510 3513 3516 3519 3522 3525 3528 3531 3534 3537 3540 3543 3546 3549 3552 3555 3558 3561 3564 3567 3570 3573 3576 3579 3582 3585 3588 3591 3594 3597 3600 3603 3606 3609 3612 3615 3618 3621 3624 3627 3630 3633 3636 3639 3642 3645 3648 3651 3654 3657 3660 3663 3666 3669 3672 3675 3678 3681 3684 3687 3690 3693 3696 3699 3702 3705 3708 3711 3714 3717 3720 3723 3726 3729 3732 3735 3738 3741 3744 3747 3750 3753 3756 3759 3762 3765 3768 3771 3774 3777 3780 3783 3786 3789 3792 3795 3798 3801 3804 3807 3810 3813 3816 3819 3822 3825 3828 3831 3834 3837 3840 3843 3846 3849 3852 3855 3858 3861 3864 3867 3870 3873 3876 3879 3882 3885 3888 3891 3894 3897 3900 3903 3906 3909 3912 3915 3918 3921 3924 3927 3930 3933 3936 3939 3942 3945 3948 3951 3954 3957 3960 3963 3966 3969 3972 3975 3978 3981 3984 3987 3990 3993 3996 3999 4002 4005 4008 4011 4014 4017 4020 4023 4026 4029 4032 4035 4038 4041 4044 4047 4050 4053 4056 4059 4062 4065 4068 4071 4074 4077 4080 4083 4086 4089 4092 4095 4098 4101 4104 4107 4110 4113 4116 4119 4122 4125 4128 4131 4134 4137 4140 4143 4146 4149 4152 4155 4158 4161 4164 4167 4170 4173 4176 4179 4182 4185 4188 4191 4194 4197 4200 4203 4206 4209 4212 4215 4218 4221 4224 4227 4230 4233 4236 4239 4242 4245 4248 4251 4254 4257 4260 4263 4266 4269 4272 4275 4278 4281 4284 4287 4290 4293 4296 4299 4302 4305 4308 4311 4314 4317 4320 4323 4326 4329 4332 4335 4338 4341 4344 4347 4350 4353 4356 4359 4362 4365 4368 4371 4374 4377 4380 4383 4386 4389 4392 4395 4398 4401 4404 4407 4410 4413 4416 4419 4422 4425 4428 4431 4434 4437 4440 4443 4446 4449 4452

1000

During its second annual meeting, which took place in the city of San Francisco, the group elected its first president, a 34-year-old physician from the University of California at Los Angeles. The president, who is also a member of the group, is a 34-year-old physician from the University of California at Los Angeles. The president, who is also a member of the group, is a 34-year-old physician from the University of California at Los Angeles. The president, who is also a member of the group, is a 34-year-old physician from the University of California at Los Angeles.

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Q Which spreadsheet is suitable for accountants, engineers, scientists and home users?

A: Autocalc 64 is ideal for any application involving extensive manipulation of data and formulae from financial planning to market research.

Q Which spreadsheet offers an advanced level of formula handling?

A: Autocalc 64 copes easily with trigonometrical functions, parentheses and boolean logic as well as totalling and averaging.

Q Which spreadsheet accepts complex conditional statements?

A: Autocalc 64 can handle statements as complex as IF $a1 < 4,500$ OR $a1 > 8,500$ AND $a2 = 500$ THEN $b1 = 0$.

Q Which spreadsheet offers a flexible screen format?

A: Autocalc 64 allows you to select (i) column widths from 3 to 30 characters; (ii) the number of rows/ columns you need (iii) up to 3,000 cells of information (iv) text or numerical entries lined up to the right or the left, or a combination.

Q Which spreadsheet offers a choice of numerical formats?

A: Autocalc 64 gives you a choice of (i) integers; (ii) floating decimal point; (iii) currency; (iv) any combination of these.

Q Which spreadsheet offers a full replicate facility?

A: Autocalc 64 has an advanced replication function for transferring text, data, formulae or conditional statements from any cell (or block of cells) to any other(s) without monotonous retyping. A 'go to' facility will take the cursor instantly to any cell of your choice — saving time.

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Q Which spreadsheet is compatible with standard Commodore printers?

A: Autocalc 64 gives you a printout facility using any of these printers: Commodore 1515, 1525, MPS 801, 1526, MCS 801, DPS 1101, Seikosha GP100HC.

Q Which spreadsheet is 100% machine code for fast efficient responses, and offers a choice of saving to disk (using 1541 drive) or to tape using a C2N unit?

A: Autocalc 64 — as if you didn't know!

Q Which spreadsheet sells at a realistic budget price?

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Q Where do I get one?

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Working Vic

Book, Putting Your Vic 20 to Work

Author: Tom Lutz
Publisher: Dorland
Copi: 0195

Reviewed: David Shepherdson

This book is well laid out and well printed. The 10 programs are taken from a prior listing and are a mix of character codes rather than control codes, which makes the programs easier to type in. All the programs should fit into the unexpanded Vic and, as there is not one PRG or POKE throughout the book, they would also transfer straight into the C64.

The last parts of the book are not the programs themselves, which are generally short and elementary, but the accompanying pages of explanation. The book starts with an introduction on how to use the book, then follows with a chapter on algorithms in six chapters each ending for

logic gates and instructions, not as binary format as page 1 AND $I = 1$, but as questions and answers tables.

In chapter 3, Pseudo-Coding crops up, but is used in Assembly language, but as

someone who has mastered the user's manual and wishes to go just a little further. All the programs can be improved by just as much as any sound, value or character colour.

Beginner's Basic

Book, Commodore 64 — Vic 20 Basic

Author: Richard Hestell & Thomas Winkelschaefer
Publisher: Prentice Hall
Copi: 0133

Reviewed: Gwyn Davies

Prentice Hall's publication *Commodore 64 — Vic20 Basic* is a complete plodding beginner's book that aims gradually to anything beyond the 'learning-to-peek-and-poke' level. It looks very much as though it was written specifically for introductory programming courses in US high schools and junior colleges, hence the emphasis on plotting, plotting graphics, plotting patterns, graphics, and the Stars and Stripes.

Its principal limitation is that the authors assume fairly

well-aid in the idea that the most interesting things you can do with a micro are involve abundant use of the graphics characters. So, before even dealing with fundamentals as the PRINT statement, they have you drawing diamonds and calculating rectangles all over the screen, and it is not long before you start producing little men on the screen and writing your name in three dimensional characters across your ever-present monitor. What is all very well, of course, but what about the spirit?

Then, alas, is where the authors let you down, and for a very obvious reason. Since nearly all the algorithms are intended for use on both the Vic20 and the Commodore 64, there is very little specifically a couple of appendices, in fact the two appendices are only one of the two books. What the means is that Commodore 64 users have to copy their own machine to the full are liable to feel that they have been robbed of most of the £12.95 they had to shell out for this book.



used to explain the program steps. Each of the following chapters covered a program, a list of variables used, a list by line explanations, the 'source codes' when they arise, the vocabulary of programs not used, and finally a few exercises for you to do. This book is aimed at

How well do you know Commodore?



Hints

1. All entries must fit in the space provided.
2. No Commodore will be entered.
3. The judge will be in line.
4. No Commodore will be entered.
5. All entries must fit in the space provided.



How well do you know Commodore?

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

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8. _____

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1. What does CBM stand for?
2. Which company has recently been taken over by Commodore founder Jack Trammell?
3. What name follows Atari for the Commodore 64?
4. What does HD stand for?
5. What are the names of the 4th March's games via Metropolitan Library Bank At The Edge Of Time — the names of the names most commonly made?
6. What will know Commodore employee has decorated with the Order of the British Empire?
7. Who is Commodore's new president?
8. What does VIC stand for?
9. Which company has Commodore's marketing manager John Benson recently joined?
10. Commodore is moving from its UK base in Slough. Where to?

The breaker

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ANSWER BACK

Spinning reels

I'VE WRITTEN a program in Basic to represent a test machine. The program uses RPT graphics for an address window, and the END function to park tape at random. The program runs OK, but at the second 'spin' of the 'reels' the motor in my database starts, although it had stopped after loading. The only way to stop it seems to be RUN—STOP.

Although it doesn't affect the operation of the program in any way, I'd appreciate it if you could tell me how to stop this happening.

P. Shaw

London

C/o. Duxham

THE RESPONSE must be that you are FORKING values to a corrupted location, and one of these locations is the one which enables the cassette motor. Bit 3 of location 4 and I control the motor, e.g. FORK LSR to turn motor on, FORK LSR to turn motor off.

Simons suggestion

I HAVE recently bought a C120 printer, Simons Basic and disk drive. Everything works apart from the Simons Basic printer commands COPY and REDCOPY. It appears that these commands are set up for device 4, but the printer is device 0—can you tell me how to change the device number? I would prefer a hardware rather than a software solution.

Lastly, some programs will run foul with Simons Basic plugged in—why is that?

P. J. Mount

Donford

Kent

AN INFORMATION can here be changed: the BASIC's device number is given on page 4 of the manual as 15. "hardware method". The reason why some programs

will not load is that they attempt to use the same memory area as Simons Basic. The only way around this is to change the memory location of your machine code programs. If they are commercial programs this would be pretty difficult.

Sequential files

I OWN A 64 with a disk drive, but after hours of thought I have come to a dead end! I find it impossible to write a sequential program that lets you write a file, then call it up at any time, so you can add to it (just rewrite it, as I have had to do). What can you supply a solution?

Michael Williams

London

Actingham

IF YOU WANT to change data in a file whilst retaining the entire file, then you will have to use Relative Access files, in which you can access any part of the file without having to read in and process all of the preceding data.

You can find useful information in Asquith's *Compendium Handbook*, or in a book called *Accessing the Compendium 64* by Jones and Carpenter, published by Ellis Horwood. There are two books by this title, to make sure you get the right one.

Curse the cursor

I OWN A 64 and find the flashing cursor a bit demanding. Is it possible—with the use of a test program, to replace the cursor with a fractional angle line marker?

J. Cliverly

Northfield

Essex

THE FLASHING cursor is not a character, but an area changing from normal to inverse at the memory location where you are. Is

from CTRL and SYS ON then the space bar, and you'll create a cursor bar across the screen. Place the cursor so that bar and you'll see a flashing blue cursor. In

programs made up your own's have any problem, since the cursor is normally off and your own program can characterise you want to replace it. In direct mode you will have to direct the CHRGCT to make it one of your own, which will put the character you require at the cursor location.

1541 copy routines

I HAVE recently acquired a second 1541 disk drive and would welcome a program which would copy both disks by block using both drives.

I appreciate that it's possible to copy a disk using both drives and the Copy-41 64 program, but this does not give us accurate block to block copy. The only other method which will give a true copy in the 15 options on the 1541 backup program.

However, this is a slow and time-consuming operation needing constant attention by changing the disks.

D. White

London

Don't

TRY "The Clone Machine", which is available from Micro-Mate Ltd for of PO Box 181, Temple Place, W2 8PH, USA. This costs for a number of combinations of different drives.

Ain't no monitor

WHILE at school I discovered that typing SYS 1024 on the PET 4015 would enable the machine code of the program to be executed. I was then able to write a short reprogramming program.

On checking this on the P20 I found that the SYS number would not work. Could you give me the relevant SYS number?

St. Helen

Essex

Headline the file in the 40 has a machine code monitor with a test built into the PET. Set your SYS number to a non-existent number. Now via, of course, SYS is a location which contains a

BASIC routine (such as RESET) and the monitor will then indicate the error.

There is a free public domain machine code monitor called Marmon which is available in all HP41C manuals.

Time delay

I CANNOT find the way to produce a time delay of exactly one second on the 64. Can you help?

Conrad Penzance

Converton

USE all the year finding as follows:

IF PRINT "CLAR" THEN = "MAYDAY"

IF PRINT "BOMBO" THEN GOTO 10

You will see that this corresponds to hours, minutes and seconds, and you can also easily set this to the correct time of day (on the 64 hour clock) by using other direct mode or program mode. This is also used by BASIC, unlike other variables.

Direct mode, THE = "MAYDAY" then press RETURN at the right time. Program mode, use loop, all will— all, press return at the right moment.

Code and colours

IS IT possible to stop all machine code programs from auto-running?

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11. *Journal of the American Medical Association*, 273, 1995, 1253-1257.

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THE AUTHOR

John Wood is one of the original UK wargaming and has been designing and developing wargames for many years.



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